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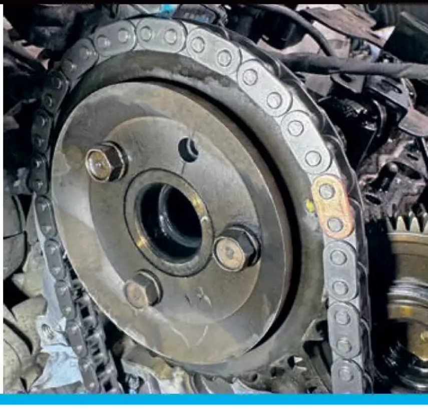

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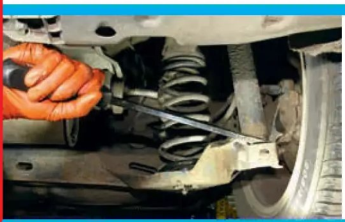

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ALLOY WHEEL REFURBISHMENT

10 PAGE SPECIAL

- Alloy ailments
- Diamond-cut wheels
- 52-step guide to a professional refurb

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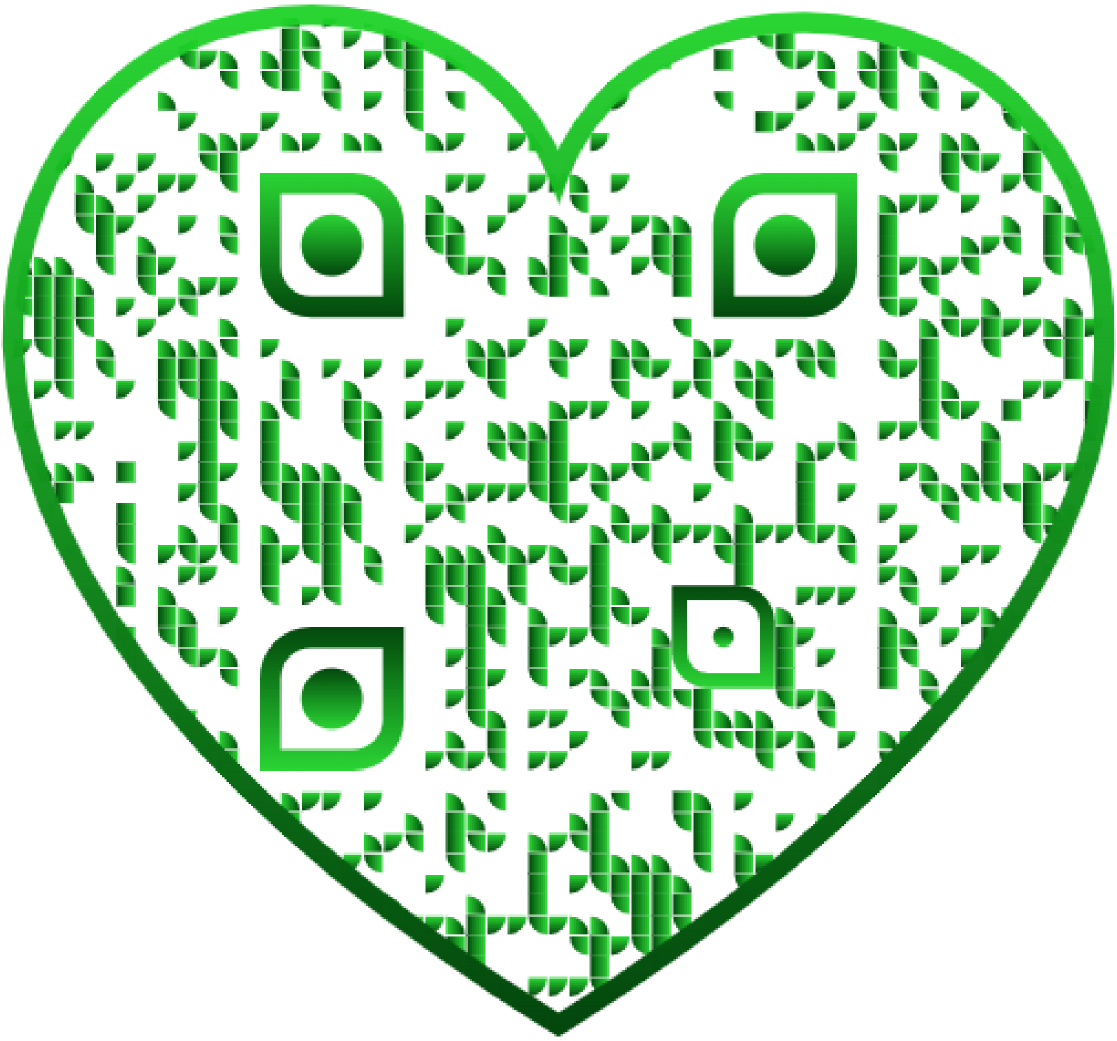

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Out of Town

▶ During September I travelled many miles. First, a trade seminar at Mark Shipman's garage (AES York Ltd). Mark has thankfully helped us at *CM* over the past few years, offering his garage as a place to repair vehicles while we make notes and take pictures for magazine content. Mark read *CM* as an apprentice, and he sees that helping us will support young technicians learn their trade skills.

Mark organises an annual two-day (weekend) get-together, where garage owners and technicians gather to listen to leading industry bodies and trade people speak about the automotive sector. Most of us arrive on the Friday afternoon for beers in York before evening food. Sitting with 40-50 guys at an Indian restaurant is something to witness, I can tell you! Next morning, from our hotel it's a 15-mile drive north of York to Mark's garage, where the Saturday morning kicked-off at 09.30.

Excellent informative talks were given by A1 ADAS Solutions, Ben Automotive Charity, Delphi, Hella, Howden Motor Trade Insurance to name a few. Topdon UK had a VW Crafter stock display van and Eurorepar, GSF and JLM Lubricants all had products on show. It was great to chat with them all.

With the event finished on Sunday afternoon, *CM* contributor Rob Hawkins and Mark Shipman lifted the bare engine that we've recently swapped out of my Toyota Aygo (more in the next issue) into the boot of my Ford Focus Mk2. Next day, Rob and I drove to Harrogate College for the newly recruited Motor Vehicle students to strip down this Aygo engine. In fact, it was fully stripped in one day. I headed back on the Tuesday, arriving home in my 2006 Focus Titanium 1.6 petrol after covering 795 miles – averaging around 42mpg.

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Rob Hawkins (right) and myself at Mark Shipman's event in early September.

Mike Schlup is the owner of Kalimex, who distribute K-Seal, Quicksteel and JLM Lubricants in the UK. Mike is seen here at Mark Shipman's garage with his son Oli.

Distribution of accessories

▶ Later in September, I drove down to Chichester in West Sussex to see JRP Distribution Ltd, who had invited several motoring journalists along to its mammoth distribution centre.

I like to hear about UK businesses doing well. JRP Distribution was founded in 1981 and through expansion is still a family-owned independent business. Jon Page was made redundant from the automotive industry in the early 80s, so he decided to start out initially as an agent and then increasingly as a stockist. Selling consumables that Jon bagged under the 'Tecniks' label – a name Jon had invented for his business market.

Roll on to 2005, Jon's son Ollie joins the business, and quickly secures supply chains and eventually a team in the Far East. Jon's daughter, Kelly, joined in 2016 to boost financial and operational support. Today, the company supplies motor factors and retail customers from single stores to multinationals.

In 2010 the Simply Auto brand was introduced as a new brand to JRP for auto accessories. In 2013, the 'Simply' branded products won the contract to supply Halfords, mostly repackaged boxes with the Halfords logo. This big step allowed Simply Brands to create Simply Power in 2014, Simply Tools in 2015 and Simply Cycling in 2023, amongst others.

The first JRP discussion of the day was wiper blades. There's more to the humble wiper blade than you would expect. Launched in 2024, the Simply Brands wiper blades were designed and developed with knowledge from new team member, Sam Robinson, who worked at Trico for 10 years previously. More on wiper blades on page 16.

Other brands in the JRP portfolio include Autobar, EcoMotive, J-B Weld, Frsh, Quixx, Stoner Car Care and Svitol.

Products are not sold online to consumers, but you will, of course, recognise these company names and they're available through Halfords or your local parts store and online. Best to look at JRP's website to find out what they offer... jrpdistribution.co.uk

I'm seen here (still wearing the hi-vis vest) with other motoring journalists at JRP Distribution Ltd to learn how they are advancing in the automotive sector. Here, the representative from Frsh Scents talks to us about its expanding range and product development.

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We are sorry, but apart from material sent to *Help!* or *Diagnostics Doctor*, not all correspondence can be replied to personally, though everything is read carefully. Emails will be treated in the same way as ordinary mail – the editor is not normally available to provide instant replies.

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The Peter Simpson COLUMN

This month Peter catches up on what has, and has not, happened regarding some previous column-topics from the past four years.

▶ These days, I write for several different magazines; at the last count I had four regular outlets plus a few others that take my words of alleged wisdom as and when they think I've something worthwhile to say. The main 'job' these days, as I've mentioned before, is editing *Classic & Vintage Commercials* magazine. But as well as this I also do stuff for *Classics World*, *MG Enthusiast* and, of course, *Car Mechanics*. All these titles are different and produced for different audiences, so I wouldn't use the same material in more than one. There are, though, some topics which are appropriate for more than one title, though the angle will, of course, be different.

Anyway, I do occasionally now find myself struggling to remember if a particular thing has been covered before in a particular title, so in a rare moment of organisation, I've just spent a couple of hours going back over the past five years in all my magazines and listing everything I've written about.

But in doing so for *Car Mechanics*, it occurred to me that there have been further developments on one or two of the issues I've raised since 2021. There have also been some which there really should have been change on but there has not been.

Here are a few 'updates'...

I've talked about **private parking companies** and concerns three times since 2021 (February 2021, April 2022 and August 2022). The final time talked about the Code of Practice having been put on hold due to pressure from the private parking industry. Sources have suggested that the industry had threatened to apply for a full Judicial Review if the Code of Practice was imposed. Three years on, we still don't have a legally binding Code of Practice, and while there are now voluntary codes, and several companies do seem to be abiding by these, others are not, and some of the most controversial aspects such as hefty debt collectors' charges, remain in place. A further consultation on a revised Code of Practice has, however, just closed so hopefully something positive will emerge soon.

Another issue that's still, sadly, ongoing is the **Problems at the DVLA** which I talked about in April 2021. Although people have always rather liked to have a bit of a moan about "Swansea", until around 2020 it was actually an efficient and well-run operation. Mistakes were rare, and on the odd occasion when something did go wrong it was sorted very quickly.

2020 and COVID-19 changed all that, however. Staff dealing with non-sensitive electronic stuff could work from home, but a lot of DVLA stuff can't leave the site, and there's evidence that management pressurised some staff to work in conditions under which COVID thrived. Staff shortages also led to many specialist departments (such as trade plates and historic vehicle registration) being staffed by people moved over from other departments, which resulted in many wrong decisions.

Four years on, things are better but still far from pre-2020 service levels. Routine electronic-only stuff is generally processed quickly, but many non-standard services requiring human intervention are taking ages; I know of one case where a driving licence name change of surname that was supplied with all necessary documentation has taken six months and counting. With some DVLA tasks it now seems as if getting a local MP involved is almost part of the process!

In November 2022, I commented on the increasing difficulty of finding **lock-up garages to rent**. This has, if anything become even harder, as more local councils see their stocks of lock-up garages as disposable assets which it's more cost-effective to sell for redevelopment and help fund core activities than continue to rent out. An additional issue is that most modern cars are just too big to fit inside a standard-sized lock-up garage, meaning many are now used for other storage purposes. I had a similar-ish situation with my garage-workshop last year – a few months after I'd moved in, my landlady told me that she was selling up and I needed to leave. So in order to stay put, I raised a loan and bought it myself.

A couple of personal updates to finish. In April 2023 I reported that the family **Kia Sorento had been remapped** – but to improve economy rather than performance. Initial results showed an average MPG increase from 29.8mpg to 34.4mpg. Two and a half years on that improvement remains very evident – in fact the current figure is 34.8. And we've noticed nothing else at all that's different, so I'm counting that a significant success.

Finally, there's something that I still haven't succeeded in doing. One year ago, in October 2024, I pondered the question **Fleet Reduction**, and which car(s) from the Simpson Collection ought perhaps to find new homes. Guess what. Apart from the Morris Minor Traveller which was never intended to stay beyond its life as a project car, I haven't managed to part with any of them. Maybe next year.

These days, I write for several magazines, but this image (taken in the Exmouth branch of TG Jones) shows five titles containing my material – *Car Mechanics*, *Classic & Vintage Commercials*, *Classics World* and *MG Enthusiast* – plus, from outside the Kelsey Media stable, *Bus & Coach Preservation*. Unsurprisingly, remembering what has appeared where and when can be confusing.

Follow Rob on X: **#CarTechJourno**
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ALLOY WHEELS

As alloy wheels have become more elaborate, renovation has become increasingly complex, leading **Rob Marshall** to reveal how the professional refurbishers manage.

Where damage is too extensive for a DIY, or smart repairer, the remaining option is full refurbishment.

Despite alloy wheel heritage stretching back to racing exotica of the twenties and thirties, they took a while to become attainable to the everyday motorist. Buoyed by their motorsports image, a set of 'alloys' became a desirable and attainable aftermarket upgrade. Being lighter and, usually, more pleasing aesthetically than conventional steel rims, car manufacturers latched on and sold their bespoke designs as both sporting options and valuable standard equipment to their more expensive models. Today, most cars boast a set of alloys, with heavier, but cheaper, 'steelies' being prioritised for low-spec models, or the spare, where fitted. Even so, steel wheels retain the advantage, when strength is more important than looks. This explains why many vans, pick-up trucks and serious off-road vehicles retain them.

Alloy advantages

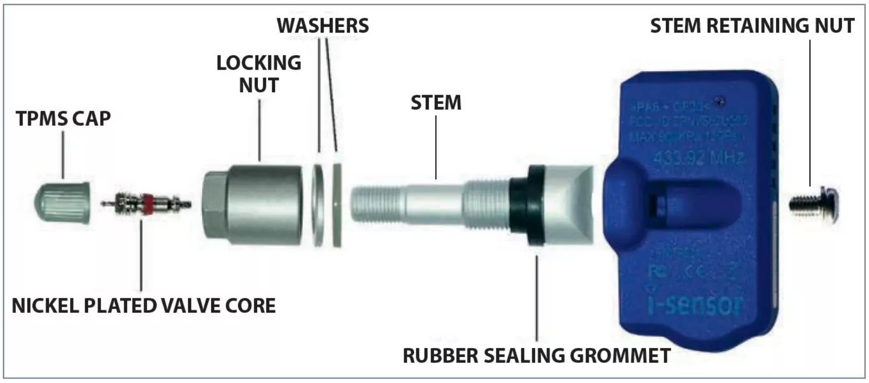
The main benefits are looks. While car designers have their creativity limited largely by legislation, wheel rims are one of the few areas where they enjoy a degree of relative freedom. Enhancements in production techniques have allowed ever-more intricate designs to be combined with a variety of colours and finishes. Of these, diamond-cut surfaces have become the most popular recent trend, where a mirror-like finish contrasts against adjacent dark surfaces.

Alloy wheels keep not just designers but also chassis engineers happy, as per their racing heritage. Alloy wheels benefit handling and ride quality for several reasons, including reducing unsprung weight. Even comparatively small reductions in weight overall make it easier for manufacturers to meet fuel economy, carbon dioxide, or range targets. Additionally, with alloy wheel designs being more open than steels, braking system cooling is enhanced.

What is the price?

While alloy wheels contribute greatly to a car's good looks, they need regular maintenance to keep them at their best. Worcestershire-based refurbishment specialist, Premier Wheels Midlands, views corrosion as the main threat but it reports that the resultant degeneration tends to look worse than it is. To date, the firm has never encountered an alloy wheel, where corrosion has compromised the wheel's integrity, although it advises that slow punctures can result, when corrosion breaks the bead between the tyre and rim.

Another problem is physical damage, a situation that is worsening. While the state of UK roads is partially responsible, unsympathetic/careless



Tyre pressure monitoring systems require servicing, whenever they are removed. Ensure that this work is done, when seeking quotations.

Some alloy wheel designs are hard enough to clean, let alone refurbish from home.

Some alloys possess decals beneath the lacquer. These will be removed during the chemical stripping process, so specify if you want them reinstated.

driving and trends of increasing vehicle weights, coupled with low-profile tyres, are placing extra stress on the wheels. Admittedly, alloy wheel rims are designed to flex slightly in use but too much causes buckling. Furthermore, excessive stress that is caused, most commonly, by impact damage, can create hairline fractures. Usually, these can be seen between the wheel rim and the tyre bead. Repairing buckling and cracks is not a DIY task and so you will need to ask a specialist for advice about whether, or not, the wheel can be salvaged.

Who can help you?

As editor Knowles demonstrated in the October 2025 issue with the project Mazda MX-5 alloys, minor imperfections can be addressed cost-effectively by a DIYer with some time and knowledge. Should the damage be more advanced, you lack the time/skills, or you are seeking to sell the car and wish to optimise its value, consider the services of a smart repairer. We covered smart repairs in our June 2023 issue and recommend the service as a good option for convenient medium-term repairs – providing that you choose an experienced and diligent company.

Some wheels possess different finishes. This Range Rover wheel has satin and gloss black finishes adjacent to each other.

Apart from avoiding potholes and kerbing, alloy wheels benefit from regular cleaning, preferably with a pH-neutral detergent. Be wary that some roadside car washes are unregulated and use very aggressive chemicals that can cause long-term harm to protective lacquer.

Mistakes happen. Therefore, select tyres with integral rim blocks that are built into the sidewalls. This is an extra layer of rubber that helps to protect the rims if the wheels are kerbed.

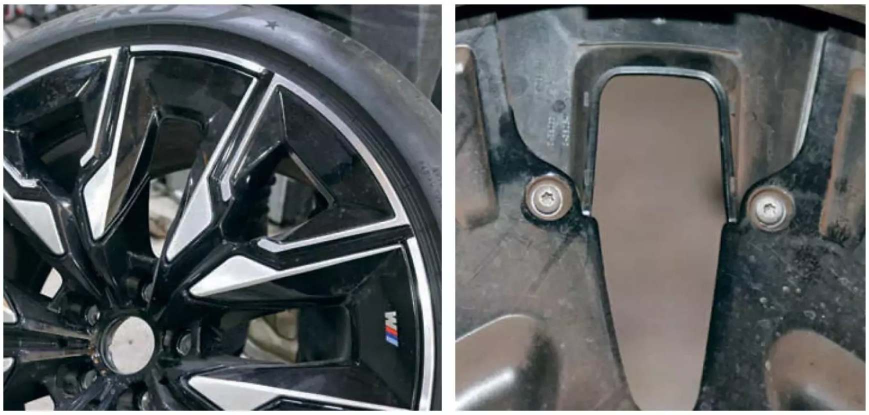
WHAT ARE ALLOY RIMS?

▶ Conventional steel wheels comprise a pressed steel wheel rim/barrel and centre disc, which are welded together. The result is strong and relatively inexpensive to produce. To protect against rust, manufacturers used to prime and/or top-coat the bare steel. Clip-on wheel trims provided an inexpensive means of improving and updating a car's looks, without having to change rims. It also negated the need to top-coat the rim, which is why so many cars with wheel trims wear black primer, only. Any rusting tends to be hidden by the wheel trim.

Unlike steel rims, those made from an alloy tend to be cast, not pressed/stamped. Forged alloy wheels are compressed under high pressure to reduce weight but increase strength. Yet, they tend to cost at least double that of the more common cast alternatives.

Even so, alloy wheels use a combination of metals. The most common mix of materials used on today's mainstream cars is aluminium alloy and the manufacturer dictates the blend of ingredients, in accordance with the specifications supplied by the carmaker.

In Premier Wheels Midlands' experience, alloy wheels that are fitted to the car when new (i.e. Original Equipment Manufacturer, or OEM) tend to be of very high quality. While some wheels are more prone to damage than others, the reasons tend to be down to how they are used, and, occasionally, the spoke design, rather than a defect in the materials used.

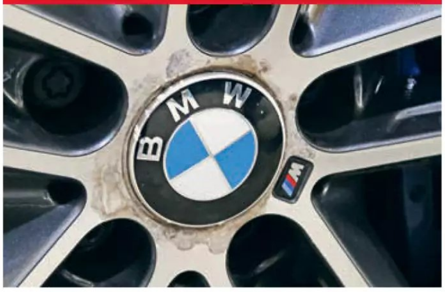


Some wheels feature bolt-on trim panels. This BMW alloy wheel has multiple panels, fixed with Torx screws from behind.

ROB'S TOP TIP

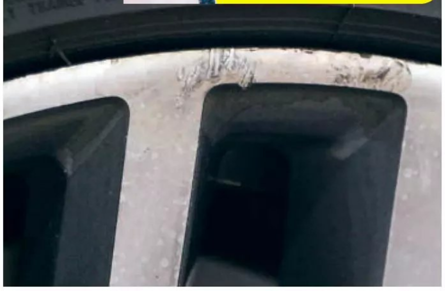
Do not forget to hand over your locking wheel nut key.

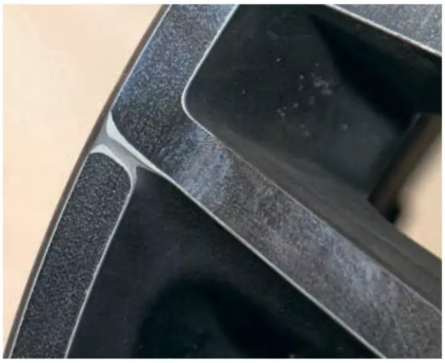
ALLOY AILMENTS



A1 ◀ Corrosion tends to be cosmetic. A popular starting point is surrounding the centre cap, caused by the protective lacquer being chipped. While moisture is prone to sitting in this area, the rate of corrosion will accelerate if acidic cleaning chemicals are used and not rinsed away sufficiently.

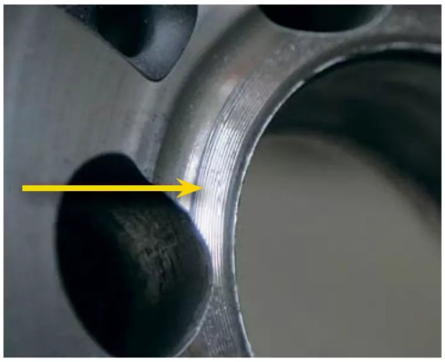
A2 ▶ Diamond-cut surfaces suffer because of poor lacquer adhesion, or the protective clear coat being chipped off around designs that possess sharp edges. 'Kerbing' is a major menace, because the repair dictates that metal is removed to bring the surface in line with the deepest parts of the scrape.

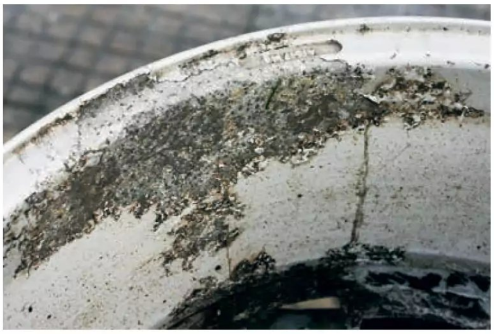




A3 ◀ This repair method poses a problem, because the diamond-cut areas on some alloy wheels protrude only slightly. This means that they can be machined by a prescribed amount. This alloy wheel's diamond-cut edge has been machined as low as possible – any further would mean that it would sit flush with the surrounding area.

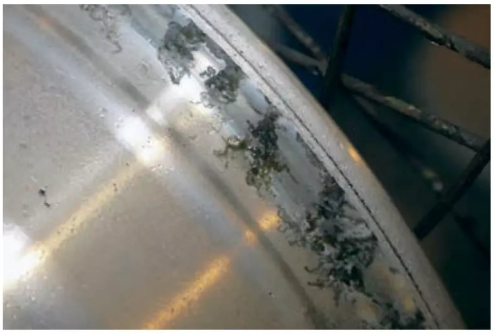
A4 ▶ It can be hard to tell if your diamond-cut wheel has been machined as low as it can go during a previous repair. A potential clue is to look for circular milling 'chattering' marks surrounding the centre of the wheel, caused by the cutting blade (arrowed).

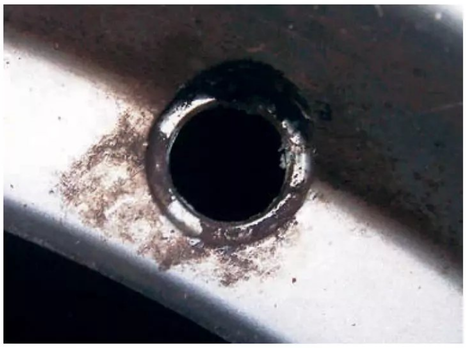




A5 ◀ Corrosion remains the main problem that ruins the look of your alloy wheels. While ugly, corrosion tends not to render a wheel dangerous. Even when corrosion is as bad as this, the wheel is still safe to use.

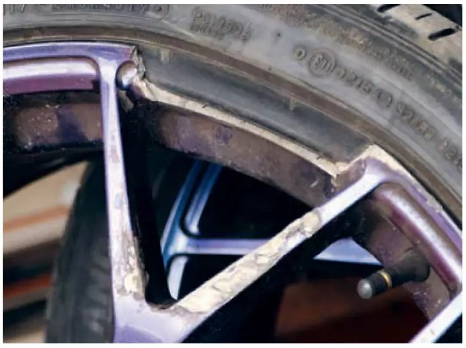
A6 ▶ Yet, corrosion can pose a problem, when it occurs between the wheel and tyre contact point. This 'bead' can then leak air pressure, causing a slow puncture.

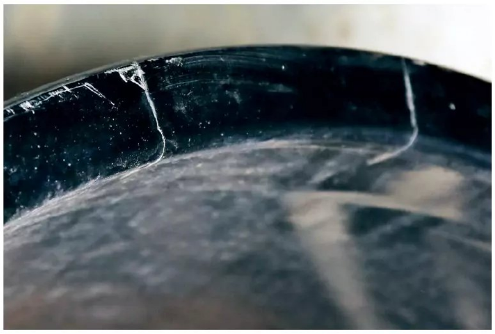




A7 ◀ Air leaks can also emanate from where corrosion starts around the air valve. This is caused by lacquer being chipped away from the orifice, when a replacement valve is installed, and a mix of moisture, road dirt and brake dust building around the area.

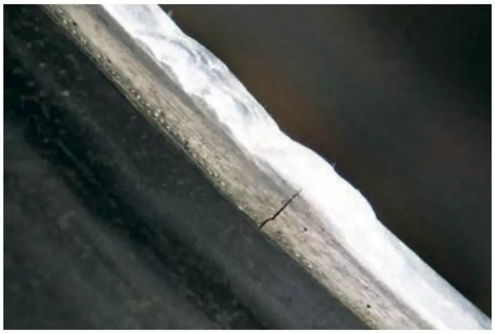
A8 ▶ Structural damage tends to result from heavy impact damage. Most commonly, this is caused by careless driving, or poor road surfaces. While steel wheels will bend, alloy wheels are more prone to fracturing. Damage like this cannot be repaired.





A9 ◀ Alloy wheels can also buckle and crack. Thankfully, both of these conditions can be remedied. Yet, specialists tend not to repair cranks that are too close together.

A10 ▶ Cracks can also appear close to areas that have been welded previously. The repairer will assess whether, or not, it is worth welding this area again.



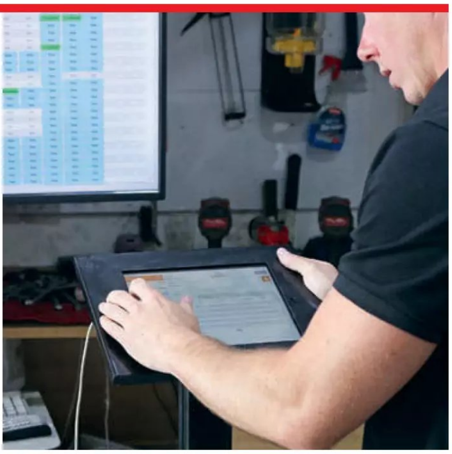
The alternative is one on which this article focusses: refurbishment. Based in Pershore, Premier Wheels Midlands has established itself as a major player in the refurbishment industry, having grown as an extension of a powder-coating specialist. While it means no disrespect to smart repairers, the firm highlights that a complete refurbishment is more akin to remanufacturing for mechanical parts. This is where the complete component is stripped, inspected and repaired. The result is a component that is at least as good as a brand-new replacement from a main dealer. While the prices for a complete wheel strip, repair and refurbishment are likely to be higher than that from a localised smart repairer, it will be lower than a replacement main dealer-supplied new alloy wheel.

Yet, this does not mean that you are settling for second-best. Premier Wheels Midlands reasons that its refurbished wheels are even better, because of the thicker paint film. It reports that thin paint is failing on many alloy wheels, especially those from Far Eastern car brands. It highlights some of the wheels from the premium German brands as having the thickest paint, although many of those wheels have diamond-cut surfaces that can deteriorate rapidly, meaning that the lovely thick paint has to be stripped off anyway.

The downside of a complete refurbishment is convenience, because the car is off the road for between 2-4 days, while the wheels are removed. Some refurbishment outfits provide slave wheels and tyres; others (such as Premier Wheels Midlands) store the vehicle and offer hire cars, so inconvenience to their customers is minimised, while the following processes are carried out:

ALLOY WHEEL REFURBISHMENT

1 ◀ **As with other professional remanufacturing companies, customer details are logged and a workflow is created, so each wheel can be tracked. This facilitates the firm's quality control procedures, where checks are made at every stage.**



2 ▶ **Computer stations log the progress of every alloy wheel, as it passes through the various processes. As part of the QC procedure, records are kept not only when a wheel passes through a particular stage but also the technician working on it. Additionally, customer updates can be provided.**

3 **The wheel(s) and tyres(s) are removed from the car. Premier Wheels Midlands fits slave tyres, so the car can be parked and stored, not driven on the road.**

4 **The tyres are labelled not only by a job number code but to which hub they were fitted. Refitting the tyres to the same corner ensures the original grip and wear levels.**

5 **Any centre caps and trims are removed, before the complete wheel and tyre are hot-washed to remove road grime and brake dust. This process also facilitates a more accurate inspection of the tyre and rim.**

6 ◀ **Wheel weights are removed and scrapped, prior to the tyre being separated from the rim. The technician checks the tyre and any defects found are reported to the customer.**

7 ▶ **Tyre Pressure Monitoring (TPMS) valves are removed and the sensors are stored with the relevant tyre from which they are removed, because some of them can be coded to a particular corner of the vehicle. Again, any defects found with the valve are reported, because a TPMS fault is an MOT Test failure on cars used from January 2012.**

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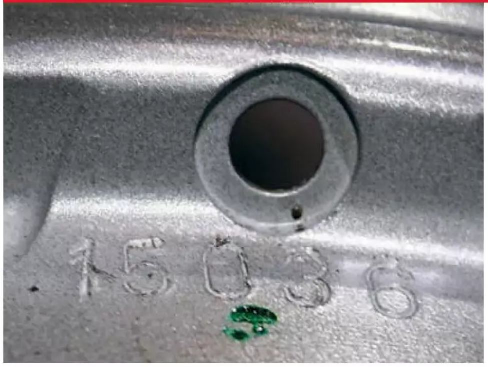
ALLOY WHEEL REFURBISHMENT CONTINUED

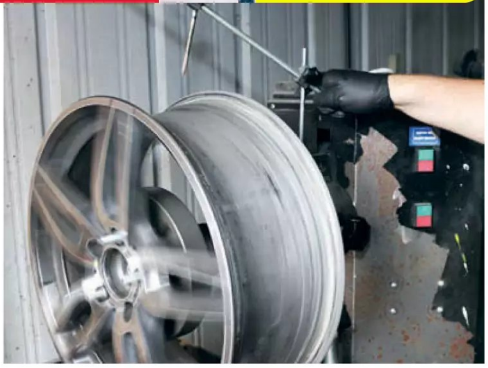
ROB'S TOP TIP

Overinflating your tyres puts extra strain on the wheel rim.

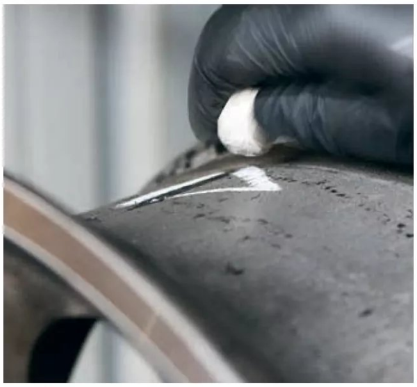


8 ◀ The wheel is stamped with the job number for traceability. The bare rim is inspected closely for any structural defects, which tend to be caused by the driver striking kerb stones, or potholes. Should none be found, the wheel proceeds to the chemical stripping stage (Step 19).

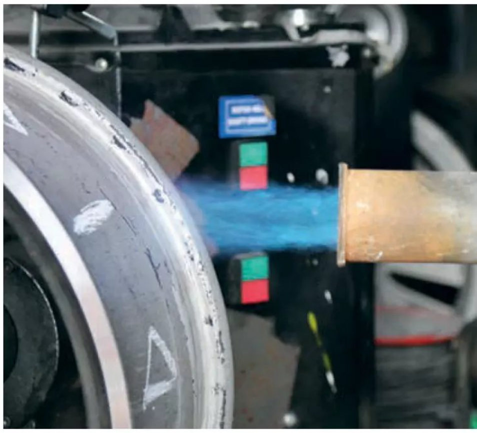
9 ▶ Should buckles be discovered, the defects department assesses whether, or not, the wheel can be repaired, by mounting the wheel on a jig and measuring the distortion.



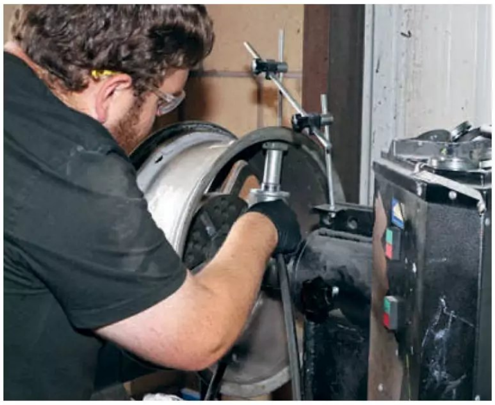
10 If the buckle is excessive, the wheel is scrap and a replacement rim will need to be sourced.



11 Should a repair be viable and safe, the technician establishes how far around the wheel the buckle extends, prior to marking the extremities and the lowest point of the damage.



12 The buckled portion is then heated. The warmed material becomes easier to manipulate and less brittle.

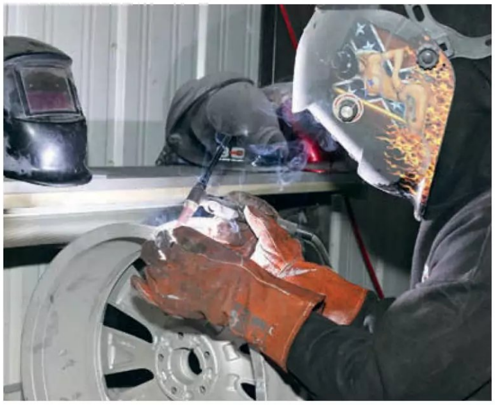


13 ◀ The buckle is removed with an hydraulic ram, acting against the inner surface of the rim barrel. Professional judgement dictates how much pressure is required to manipulate the material to its original shape.

14 ▶ Should excessive pressure be applied, the material could crack. In extreme cases, a chunk of metal could even break from the rim. Once completed, the technician checks that the buckle has been resolved. If not, Steps 11-13 are repeated.

15 ◀ Should cracks be found, again, professional judgement dictates whether, or not, a welded repair can be conducted safety. Should several cracks be present close to each other, the wheel will be rejected as scrap. Should a repair be viable, the customer is informed and the work proceeds only if authorised.

16 ▶ The repair process involves a small hole being drilled at either end of the crack to prevent it from elongating. The crack's length is ground down so it lies below the metal surface.



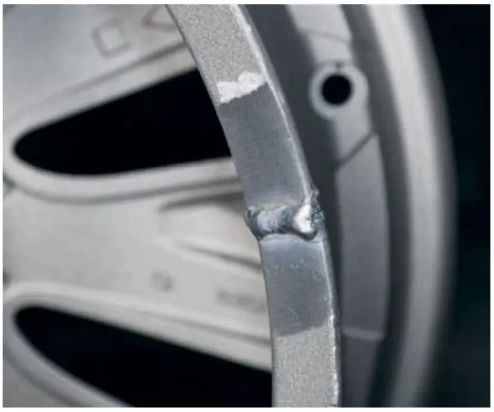
ROB'S TOP TIP

Clean your wheels frequently, especially after driving on salted roads.

A CUT ABOVE THE REST

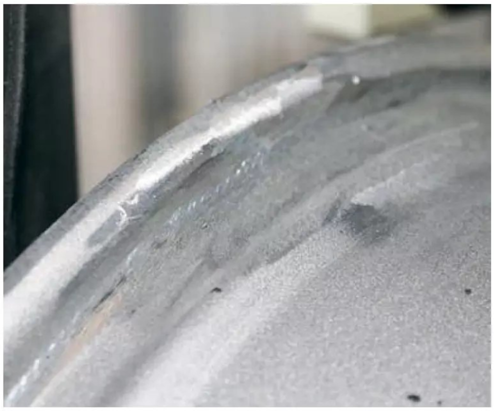
▶ Diamond-cut surface finishes appeared first on high-end cars and have filtered into the mainstream. After the rim is painted with its primer and base colour at the factory, the rim is mounted on a lathe and spun as a diamond-tipped blade moves across the surface to remove a small quantity of aluminium alloy, creating the mirror finish. The wheel is then dismounted and painted with a clear lacquer paint, which provides corrosion resistance.

Unfortunately, corrosion tends to strike the diamond-cut sections first, making the wheels look shabby. Premier Wheels Midlands theorises that the protective lacquer finds it harder to adhere to the smooth diamond-cut metal. Furthermore, the areas that have been diamond-cut can possess sharp edges, which make the lacquer more prone to chipping away. Dirty water can then seep beneath the surface, creating brown/black marks. As the corrosion spreads, you may see white lines of aluminium oxide, spreading beneath the clear coat. Sadly, the only way to rectify the problem is to remove the remaining lacquer, address any damage to the metal, by machining some of the material away, and clear-coating with good quality lacquer.



17 ◀ The resultant trough is filled with metal during the TIG-welding process. The weld is allowed to cool and the area inspected for any further cracks.

18 ▶ The weld tops are linished back level with the surrounding material. Not using excessively coarse abrasives is important, especially when working on the contact area between the tyre and rim (bead), to avoid future air pressure leaks.



19 ◀ Once any structural repairs are completed (if necessary), the wheels are placed into a chemical strip for up to five hours. This contains an acid-based cleaner that is heated to between 75 and 85°C. The chemicals are sufficiently strong to remove coatings but will not damage aluminium alloy surfaces.

20 ▶ Premier Wheels Midlands possess two chemical tanks, each of which can hold up to 20 wheels at a time. These are changed over three times a day. The residues are cleaned out after every batch and the fluid is filtered every seven days.

21 ◀ As the wheels are removed, the paint and lacquer coatings are sufficiently loose that the remnants can be lifted from the wheels by hand.

22 ▶ Finally, each wheel is jet-washed to remove not only lingering paint but also all traces of the chemicals. They are then dried, before proceeding.

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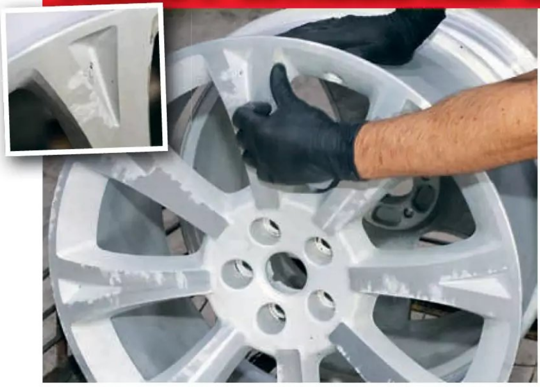
ALLOY WHEEL REFURBISHMENT CONTINUED

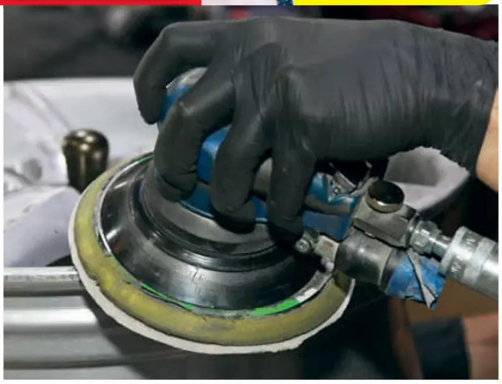
ROB'S TOP TIP

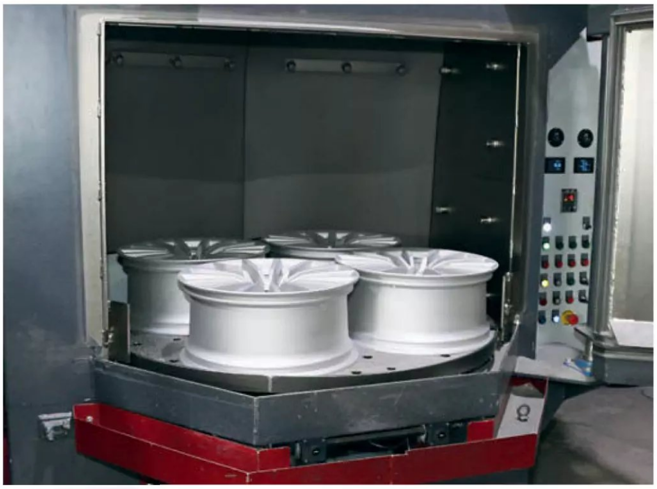
Avoid acidic, or alkaline cleaners, wherever possible.



23 ◀ Now devoid of any coatings, the bare rims are inspected again for defects that could not be spotted before. As the chemical strip will remove any prior plastic-based filler repairs, older defects will be revealed.

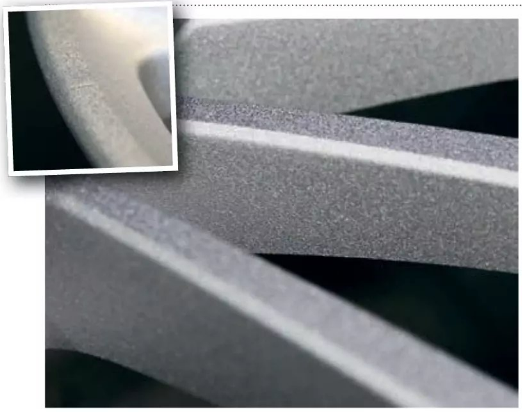
24 ▶ Minor imperfections, such as scrapes from kerb damage, can be dealt with quickly, using a range of sanding pads and wire brushes. More serious damage might dictate that the customer is contacted.





25 ◀ The wheels enter an automated blasting machine that removes minor imperfections and provides a suitable surface for optimum paint adhesion. However, the least amount of metal is removed.

26 While steel wheels can tolerate reasonably aggressive abrasive paint removal, softer aluminium alloy risks being damaged. Instead, softer (and more expensive) aluminium oxide-based blast media is employed.



27 ◀ This is the resultant bare surface finish. Pictured inset is a minor defect – as this scrape is positioned on a diamond-cut surface, it will be removed later, during Steps 40-46.

28 ▶ The painting process begins with degassing, which allows impurities that lie deep within the metal to evaporate. Every aluminium alloy wheel is placed into a metal rack and moved into a walk-in oven, where it is heated to 225°C for 25 minutes.

29 ◀ The hot wheel is moved into the spray booth. As per modern practice, the booth's airflow is filtered to remove dust as it enters and is directed towards a cascading water-based filtration system to control paint emissions.

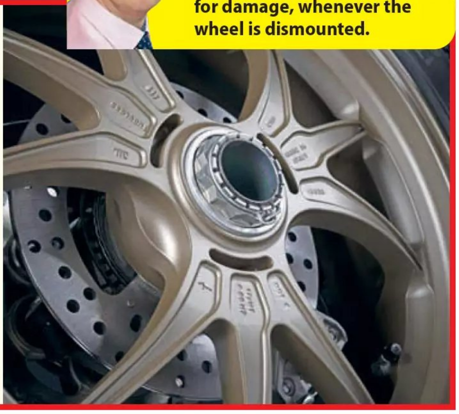
30 ▶ Primer seals the surface and is applied electrostatically, meaning the paint gun applies a positive charge to the paint particles, so they are attracted to the negatively-charged wheels. This explains why the jig (and, therefore, the wheel) is earthed. Apart from benefiting painter safety, this method ensures superior paint adhesion.

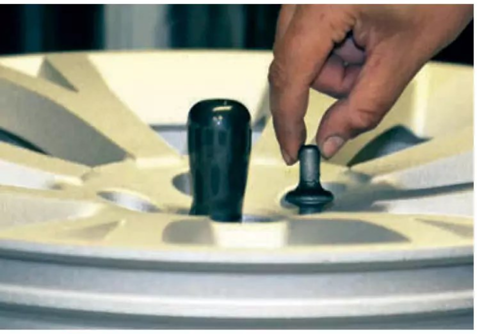
ROB'S TOP TIP

Inspect the rim's inner surface for damage, whenever the wheel is dismounted.

OTHER TYPES OF ALLOY WHEELS

▶ While this feature focusses on OEM aluminium cast alloy wheel rims, you may encounter other types of alloy wheels. The main alternative to aluminium alloy is magnesium alloy, as pictured. These are considerably more expensive to produce but around a third lighter than the more common aluminium alloy. They were used in competitive motorsport but the earlier blends used to have the unfortunate tenancy to catch fire. Even so, developments in the alloy mix have solved this problem. Due to magnesium being more reactive than aluminium, it is more corrosion-prone. This means that magnesium alloys need special care during the refurbishment process, especially as they are less tolerant to chemical stripping agents. You will tend to find magnesium alloys fitted to very high-performance road exotica, or competitive/race vehicles. They are available also through aftermarket specialist wheel manufacturers.





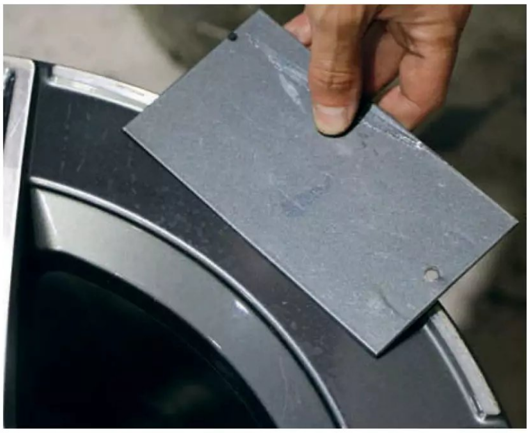
31 Bungs are placed into the bolt holes, so the mating surfaces between the wheel nut and the alloy wheel are not painted. This operation prevents the risk of the wheel nuts loosening, when the wheel is refitted to the car.

32 Before painting begins, the wheels are blown with compressed air to remove every last trace of dust that would impede a flawless finish.

33 Premier Wheels Midlands employs either grey, or black primer, depending on the final colour. The inner surfaces of the wheel's barrel are painted first...

34 ◀ ...followed by the face. The wheels are then placed back into the oven for 12 minutes at 192°C.

35 ▶ As most alloy wheels are not mono, the original colour must be matched. The techniques used are no different from those used by body shops. Pictured is a paint swatch being used against an original Audi colour to facilitate an accurate match.



36 ◀ The wheels are brought out of the oven and wet-sprayed. As the base colour coat is made from water-based paint, it dries virtually instantly. This Volvo XC90 rim is painted silver.

37 ▶ Should the wheel require diamond-cutting, this process is conducted next. Otherwise, the wheel is painted with several coats of clear-coat lacquer, applied electrostatically.

ALLOY WHEEL REFURBISHMENT CONTINUED

ROB'S TOP TIP

Consider coatings to protect the lacquer, from wax to ceramic coatings.

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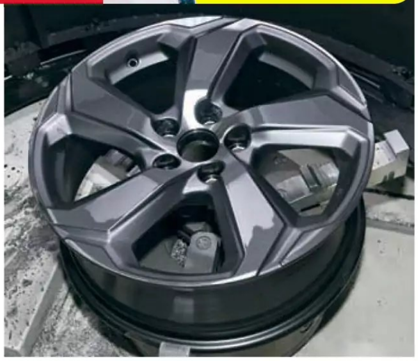
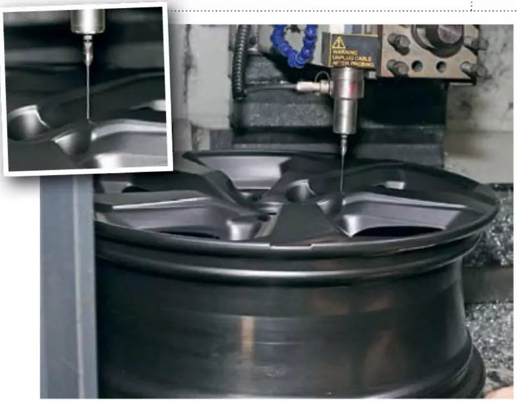
38 Once completed, the wheel is placed back into the oven for 12 minutes at 185°C. Satin, or matte, lacquer finishes may require slightly longer, owing to their slower curing times.

39 Diamond-cutting is performed after the wheel has been painted in base colour but before being lacquered. Once the primer has cured, the wheels are removed from the oven and allowed to cool.

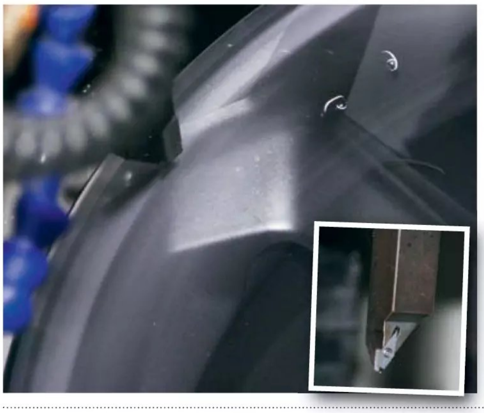


40 The wheel is then secured to the rotatable platform within the enclosed diamond-cutting CNC lathe machine. Note the fine metal shavings that this process creates, showing minute quantities of material that are shaved accurately from the rim surface.

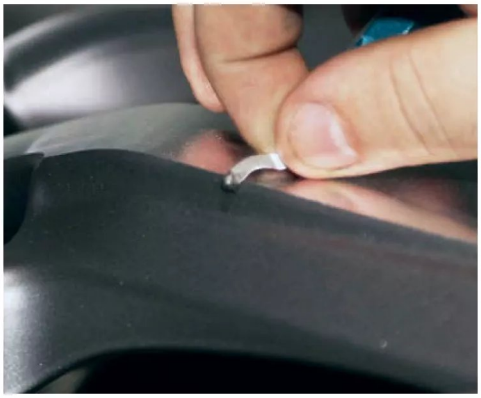


41 ◀ The machine needs programming before it makes the first cut. A pressure-sensitive probe, attached to the robotic arm, is used to plot the coordinates for that specific wheel.

42 ▶ These coordinates are entered and saved into the machine's computer. While the process is automated, a technician remains with the machine throughout the procedure, because any errors could destroy the wheel.

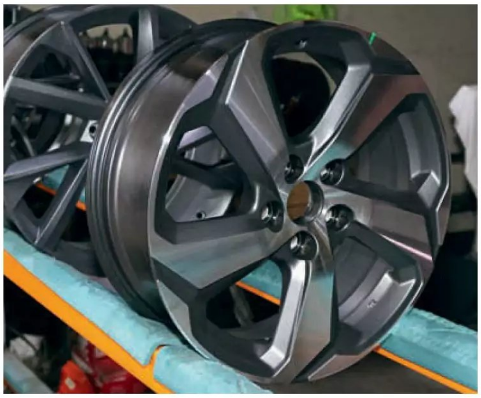


43 ◀ The probe is changed for a cutting blade, before the machine is started. When activated, the wheel is spun as the blade follows its pre-programmed course. First, it cuts through the paint, before reaching the bare metal.



44 ▶ After each blade pass, the machine is stopped and the technician inspects the wheel. If necessary, it is deburred, which removes excess metal that overhangs the newly-cut surface. This process helps to prevent the edges from introducing moisture and corrosion.

45 ◀ As metal is being removed, there is a limit to the number of times diamond-cut alloy wheels can be refurbished. Eventually, the profile of the wheel will change, affecting its look. In severe cases, removing too much metal can prejudice the wheel's structural integrity.



46 ▶ Once the diamond-cutting process is completed, the wheel is inspected once more, before re-entering the paint ovens and heated to 200°C for 12 minutes.

47 Once removed, several coats of polyurethane lacquer are applied electrostatically, as per Steps 33 and 34.

ROB'S TOP TIP

Ask your tyre fitter to take extra care with newly-painted alloys.

48 Once its protective clear-coat has been applied, the wheel enters the oven for the last time, where it is heated to 185°C for 12 minutes. Once cooled, the paint has finished curing and has no need to harden further.

THANKS TO

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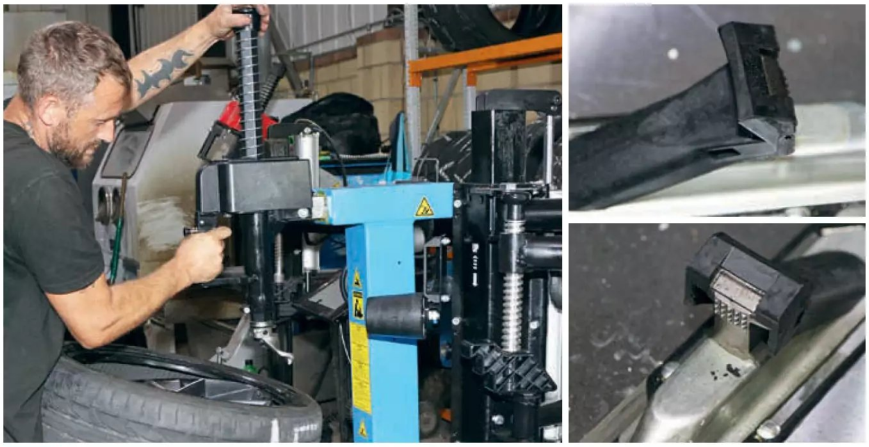
Instagram: **Premierwheelsmidlands**
WhatsApp: **07958 372117**
www.premierwheelsmidlands.co.uk

COSTS

Costs for alloy wheel refurbishment vary, depending on the services offered. **Premier Wheels Midlands** has a turnaround time of 2-3 days for alloy wheels, with 3-4 days for diamond-cut designs. Costs start at **£300** including VAT for a set of four coloured alloy wheels, with diamond-cut designs adding an extra **£200**. The costs of repairing buckles and cranks start at **£60**. These prices include VAT.

49 The tyre fitting process is now conducted with no special steps. Consider that the TPMS valves will require servicing, which may require new seals/stem/valve core/nut/cap (metal valves), or a complete new stem/cap (rubber valves). If the sensor is defective, this will require addressing (see page 6).



50 The new paint can be damaged and introduce corrosion, when the tyres are refitted. Therefore, Premier Wheels Midlands advises that the tyre fitting machine grips the rim from the outside using protective rubber covers, in preference to metal-to-metal contact from grips that extend outwards to grip the inside of the barrel.

51 The mounting point between the wheel and hub must not be painted, because the two faces must mate perfectly. It could also promote wheel nuts loosening.

52 The refurbished wheels are refitted and the nuts/bolts torqued to their required setting. Any centre caps are then refitted. It is prudent to recheck the nuts' torque after the first trip.

CM Insider

Martyn Knowles brings you news and product reviews from the automotive industry

Simply Brands reflects on a year of success for its wiper blade range

▶ Leading supplier of auto accessories and private labelling manufacturer, Simply Brands, is looking back on the successes its wiper blade range has had since launching in 2024, as well as its private label business. The Simply Brands range of wiper blades has gone from strength-to-strength in the last 12 months. From creating a wiper blade range of their own to developing wiper blade ranges for other businesses under its own label arm, Simply Brands has the product knowledge and experience for building a comprehensive wiper blade range for any business.

Developed and tested in the UK over a nine-month period, the competitively priced front wiper blade range consists of both multi-fit flat blades and conventional blades.

The multi-fit flat blade covers 98% of the car parc (vehicles in operation) and consists of 15 SKUs (Stock Keeping Unit) with eight original equipment (OE) fit adaptors that cover the 10 most popular OE arm types. This includes a retro-fit hook adaptor to upgrade older vehicles to the latest flat blade technology.

The flat blade technology delivers perfect wiping pressure across the entire blade length thanks to two precision cut steel rails, with a symmetrical spoiler reducing wind lift at high speeds. The rubber wiping element is made of a synthetic and natural rubber compound for an optimum blend of performance and durability.

The conventional blade range has 11 SKUs in lengths 280mm-700mm, and all are a metal vented frame design with a universal pre-attached adaptor to fit all hook wiper arms, as well as legacy side pin and 7mm bayonet wiper arms.

Rear blades

Replacing both integral plastic, as well as flat rear blades, the Simply programme offers like-for-like styling with the OE wiper blade as these blades offer the discreet styling and premium technology that the vehicle had when it was new.

Both plastic and flat blade styles utilise a simple multi-fit system with a maximum of five loose connectors, meaning 32 'exact fit' style rear blades can be replaced with just nine SKUs! Moreover, this range covers 85% of specialty rear blades, so a lower stock capacity does not mean reduced car parc coverage.

All blades come in environmentally-friendly carton packaging that, to assist with fitment, feature QR codes on all packaging that will direct users to a wiper blade finder, as well as installation instructions. For those who prefer written step-by-step instructions, Simply Brands also includes printed installation instructions inside every pack.

Simply
Conventional Wiper Blade
Conventional Wiper Blade
Simply
Multi-Fit Flat Wiper Blade
Multi-Fit Flat Wiper Blade

Own label solutions

While Simply Brands prides itself on its own range, it also offers own label solutions for businesses. Throughout 2024, the company launched multiple wiper blade programmes for various businesses, as well as securing the licence to be the distributor of Invisible Glass wiper blades across Europe, where Simply Brands created a brand new and highly-advanced wiper blade range.

Simply Brands' Business Development Manager, Sam Robinson, said: "We're incredibly proud of our own label business and the recognised name brands across Europe that have already put their trust in us to supply their product."

Cataclean celebrates 30 years of trading

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30 YEARS ON THE ROAD
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▶ Independently owned and headquartered in Liverpool, additives brand, Cataclean, is celebrating its 30th anniversary. Founded in 1995, Cataclean was developed in response to growing concerns about vehicle emissions, beginning with a mission to clean catalytic converters without removal.

The company was established by founders Ross Baigent and Hugh Collins. Using scientific knowledge, expert consultants, technicians and innovation, Cataclean was created.

Cataclean's patented, flagship 8-in-1 formula cleans carbon from injectors, combustion chambers, catalytic converters, DPFs, EGR valves, oxygen sensors and fuel lines with one easy-to-use, pour-and-go solution. It delivers up to 60% reduction in emissions, improves MPG and restores engine performance.

Cataclean entered the US market in the early 2010s and has since expanded its distribution to over 30 countries across five continents, including Europe, North America, Asia, Australia, and most recently, South Africa.

Cataclean is available across the UK aftermarket via major distributors and retailers including Halfords, Euro Car Parts, Amazon, Motor Parts Direct, Alliance Automotive Group, GSF Car Parts, and service centres like Kwik Fit, where Cataclean is the official supplier of fuel and engine additives.

You can find out more about Cataclean at **https://cataclean.com/**

News in Brief

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New Machine Mart Autumn/Winter Catalogue

▶ Celebrating its 75th edition, the **Machine Mart** Catalogue has earned itself a special place in busy garages and dashboards. "The new Autumn/Winter 2025/26 catalogue has over 700 price cuts and new products right across the ranges, from automotive to woodworking, welding to water pumps, and stoves and workshop heaters." Machine Mart explains. "Our core ranges remain popular year in year out and we are constantly exploring new markets too. Like our Power Station range of portable power, there's something here for everyone!" This newest edition is revved up with stacks of 'automotivation' for you and your garage. "We're showcasing big storage with big savings," continues Machine Mart. The 56in CBB213C tool chest is now selling at £598.80, a massive £72 price cut! There's a real lift to start-up garages in the Clarke CCL2250 Car Lift that is in ever-increasing demand. There's also the best-selling Clarke compressor range, with the SHHHAir Max designed to be less noisy than traditional compressors, or the new Clarke Boxer Vertical Compressor range saving valuable floor space – arriving soon! Keeping up-to-date with welding technology, the MIG120 MULTI leads the way with the option of ARC, MIG & TIG modes to deliver variable options. To get your **FREE** copy of the new catalogue, visit **www.machinemart.co.uk**, go to one of the Machine Mart stores or call 0844 880 1265.

Award-winning workshop launches DPF training

▶ Multi award-winning family business, AJ Fleetcare, have launched a training academy, with a remit to improve standards, competitively-priced learning, aimed at fellow technicians – starting with DPF training. It's a move that has been welcomed by The Motor Ombudsman, on the basis that specialist technical training for independent garages, made accessible to the many, not the few, further supports the drive for the highest level of service and work delivered to motorists. This mirrors a primary purpose of businesses adhering to the Ombudsman's Codes of Practice.

Commenting on the AJ Fleetcare Academy, Alan Landale, founder said: "In the next 12 months, our training will extend beyond DPF fundamentals, into other areas that are presently under wraps. We're starting with a full day workshop event on 28th November at our unit in Leeds, where we have ample room for up to 20 attendees. DPFs are big business, but for many workshops they're either taking too long on cleaning a DPF, sending the DPF to another workshop or as is more often the case, refusing the work. Our training will unlock a workshop's potential. We've been cleaning DPFs for several years and have become renowned as the region's go-to DPF experts. We had such a positive reaction when chatting with technicians at the Automechanika show in Birmingham recently, that it was not a case of do we launch an academy, but when. Our first pilot event sold out within 24 hours, so it's full steam ahead."

As part of the training, the team will cover the fundamentals of DPF cleaning, including how to identify a damaged DPF, the folly of forced regenerations, cleaning products to avoid and the importance of the diagnostic process. Front of house staff will gain valuable knowledge because the AJ Fleetcare team will discuss the significance of DPF maintenance, explain the operation of the DPF, and address common causes of blockages.

"We're on a mission to educate, inform and inspire technicians, with time-served, practical training, so they can realise the untapped potential of DPFs on their doorstep," continued Alan. "We'll demonstrate our procedure for addressing a blocked DPF, given we're on a firm foundation with hundreds of case studies. By offering delegate-based training, a workshop can send one or all their technicians, plus their front of house staff, knowing they will see a return on their investment with just a few DPF jobs."

The team at AJ Fleetcare use the JLM Lubricants' DPF professional toolkit and DPF cleaning and maintenance products. Commenting on this, Mike Schlup, JLM UK said: "We could not be more pleased that this award-winning team endorse JLM Lubricants' products. The training academy they have launched fills a long-standing gap in the market for high-quality expert training at an affordable price point."

The next training event takes place on Friday 28th November at the AJ Fleetcare Academy HQ in Leeds.

To find out more or to book your place email: **training@ajfleetcareacademy.co.uk** or call 0113 295 5839. Early bird booking discounts are available.

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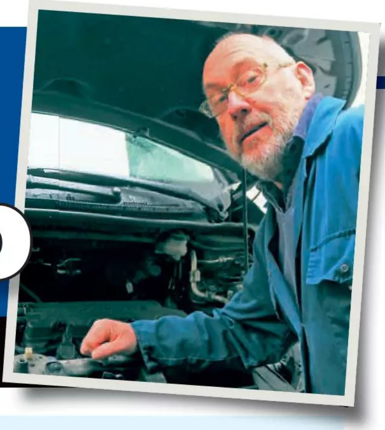
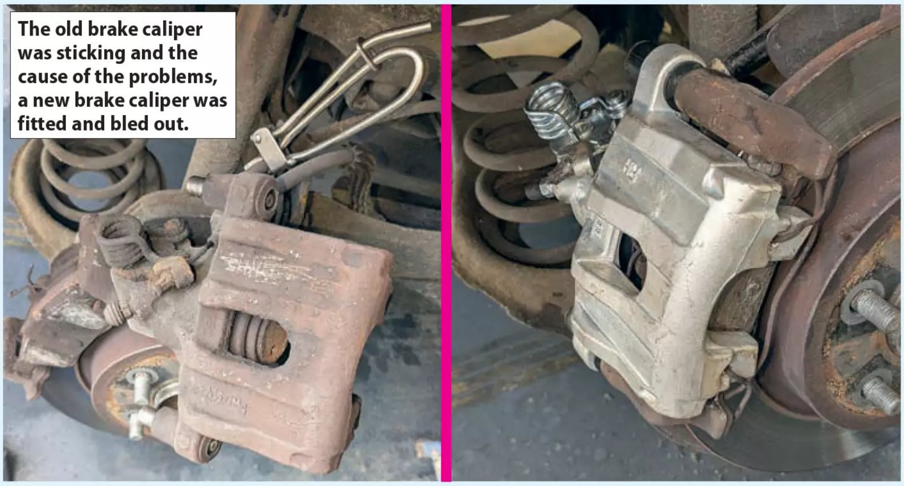
Tales from the workshop



Fixing advice from our garage proprietor Steve Rothwell

FORD FOCUS

Hot brake



The old brake caliper was sticking and the cause of the problems, a new brake caliper was fitted and bled out.

▶ After parking on a slight incline and releasing the parking brake, the owner of this 2011 Ford Focus was surprised to find that it would not roll forward. It did drive OK, but when they next parked on a slightly steeper incline, they again tried to release the handbrake to see if the motor would roll under its own steam. The result was that it stayed put, and they now knew that one of the brakes may be binding. When they arrived at the workshop the diagnosis was easily confirmed by the very hot brake on the offside rear, indicating the area of the trouble.

Removing the rear wheel, I could see that the handbrake lever was operating correctly, and the fault was not in the handbrake lever or cable, but in the caliper itself. Removing the caliper, the piston was reluctant to push back and so the decision to replace the caliper was made.

With new brake pads and the caliper fitted, and the brake fluid bled through, the Focus was parked on a slight incline and the parking brake released. This time the motor rolled freely.

HONDA CIVIC

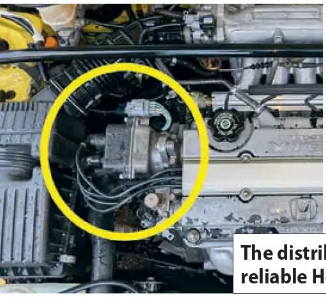
Lack of spark

▶ The owner of this 2000 Honda Civic 1.6 was quite taken aback when the engine failed to start one morning. The motor had never given any signs of a problem and had been running reliably for the eight years the present owner had owned it.

Regularly serviced, the motor had never needed anything other than the routine oils and filters, and the spark plugs had been replaced less than 8000 miles ago at a previous service.

Cranking the engine over it just continued to smoothly turn without a hint of trying to start. So, the Honda was transported to the workshop for further investigation.

Once checked, it was found that no spark was being produced, and the problem was within the distributor. These units were the Achilles heel of the Honda on this earlier engine and the only regular trouble spot. The distributor on this engine is a complete unit and contains the coil and the electronic ignition circuits. And failure can be for several reasons. The units are now relatively cheap and so rather than spend time investigating the specific component in the unit that had failed, the owner opted to just fit a new replacement unit.



The distributor is the one weak link in this otherwise reliable Honda engine and this one had just failed.

GENERAL

A warning

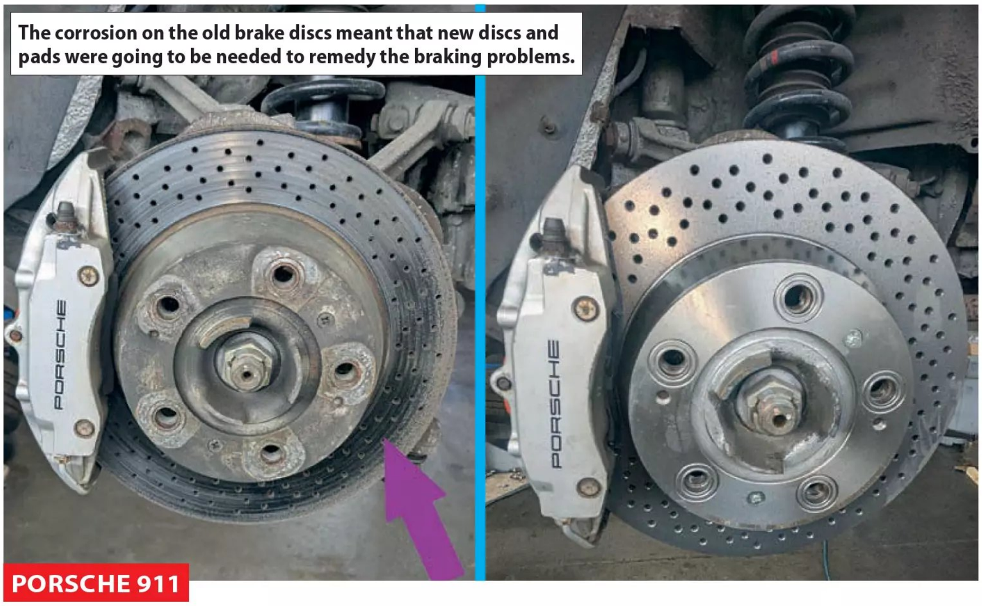
Your eyes are complex, and you only get two. Looking after them is important and don't do as I did and risk seeing the odd arc flash.

▶ I have been hands-on in the workshop since leaving school – and I completed a welding and fabrication course in my last year of school. In those days the main method of welding was Oxy-acetylene, and a pair of darken googles was all that was needed. Whilst I did cover arc, MIG and TIG welding at college, using it in the work environment did not come until a fair bit later when I got the first MIG welder at the garage.

I have since done many hours of welding and I will admit that at times I have, when doing a quick tack, simply turned my head and looked the other way, rather than don the protective helmet.

A silly move that occasionally gave me the gritty feeling of 'arc eye', that gives the impression that you have sand in your eyes. This wears off and things go on. Until a few years down the line you go to the opticians to get your eyes tested and they tell you that your poor vision is due to a "posterior subcapsular cataract". This is a fast-growing cataract that is on the back of the lens – and if left could cover the lens in six months.

Thanks to the amazing wonders of modern medicine, I had a new lens fitted in my eye which has resolved the problem. The operation was quick and painless, but please learn by my mistakes. Never weld without protection, even the odd flash of a welding arc will cause damage.



The corrosion on the old brake discs meant that new discs and pads were going to be needed to remedy the braking problems.

PORSCHE 911

Braking judder after storage

▶ This 2001 Porsche 911 3.4 Carrera (966) was used by its owner only in summer and only when the sun was shining. It was not the everyday runaround as that task fell to a far more mundane Hyundai i30.

The problem with not using the motor on a regular basis, even if as this Porsche is, the motor is stored in a dry garage, is that things do start to deteriorate, and when the owner took his 911 for a run after a long period of rest, they discovered that the brakes were feeling a little jittery.

Hoping that the discs would clean off after a good run and a bit of use, the owner tried braking quite hard a few times from motorway speeds. The result was that the brakes felt no better but a serious judder was noticed. Biting the bullet, they came in to see me.

A quick inspection of the brakes soon revealed that corrosion on the brake discs was beyond a quick clean over and new brake discs and pads were needed. At £200 for the brake discs plus the pads and labour the owner gave a deep sigh before agreeing to the work.

SUZUKI CARRY

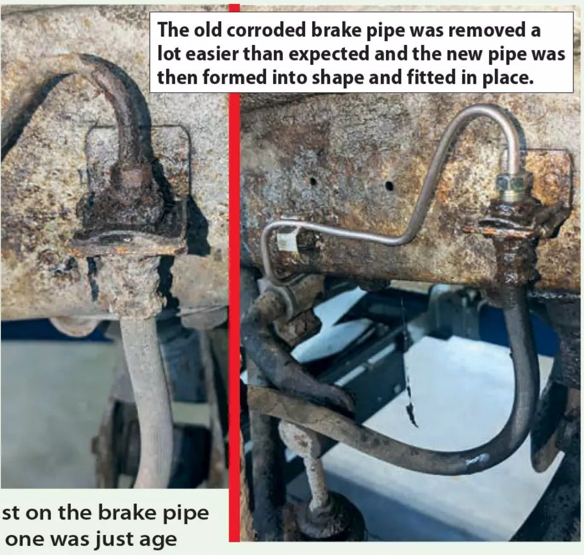
Brake pipe replacement

▶ Going back a few years brake pipes were unprotected and often prone to corrosion. When the MOT was due, the problem was picked up and the pipes needed replacing. I have also seen in days gone by, a problem caused by the MOT tester who the previous year had scratched a pipe to check its integrity. By the following year that scratch had turned into full blown rust.

That was not the cause of the rust on the brake pipe of this 2004 Suzuki Carry, and this one was just age and exposure to the elements that had caused the brake pipe to succumb to the corrosion.

Corroded brake pipes are certainly less of a common problem now, and so replacing this one made a nice change. The route was not too complex and so the new pipe could be easily moulded to the correct shape. The union on the old pipe looked to be in a poor condition but it did unscrew easily once the union started to move.

With the old pipe off and the new pipe in place, the brakes were bled and checked to ensure there was no pressure loss.



The old corroded brake pipe was removed a lot easier than expected and the new pipe was then formed into shape and fitted in place.

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VOLKSWAGEN TOURAN

ABS pump failure

▶ Having noticed the ABS light glow a few weeks back and feeling a shudder on the brake, the owner of this 2010 VW Touran TDI had been forewarned of the impending problem. A week later it was back again and now the ABS light was on permanently. The owner decided that it did now need looking at and so came along to see me.

The scanner was connected and the codes C052B and C004D, along with C004E, were showing upon the display, quelling any possible thought that a quick ABS wheel speed sensor was going to solve the problem. A check was made of the ABS control module connecting plug, but this was clean and dry, and the solution was to have the ABS pump overhauled.

The Touran was parked up in the corner and the ABS pump removed, the brake pipes blanked off and the pump sent away for a repair. On its return it was refitted and the brake system bled out, the codes duly cleared, and the ABS warning light now stayed extinguished.

The best option was to remove the old ABS pump and send it for repair. The pipes were then blanked off awaiting the return of the refurbished pump.

RANGE ROVER

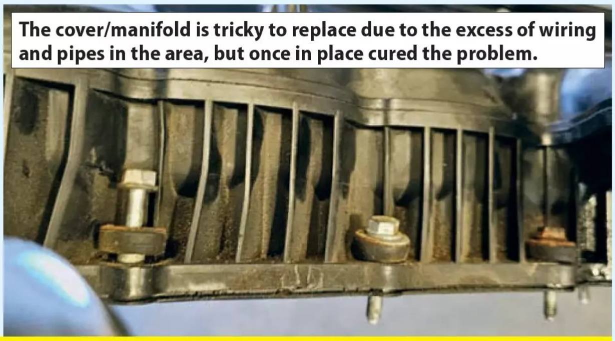
Inlet manifold puzzle

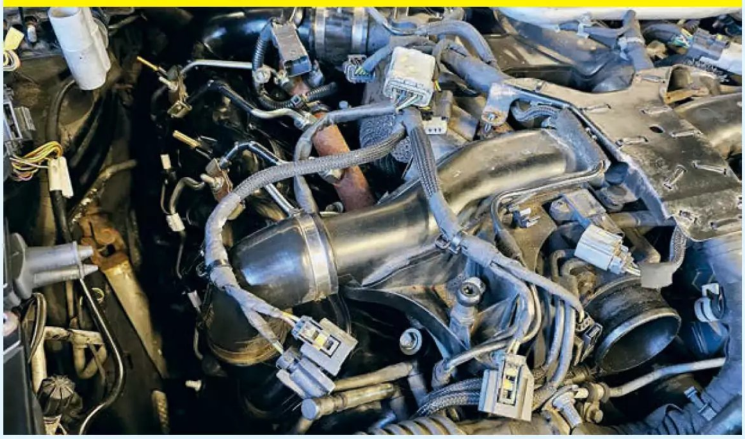
▶ This 2009 Range Rover Vogue TDV8 3.6 diesel was emitting a little smoke and burning a little oil. The owner was used to topping up the oil occasionally, but the consumption was not bad enough to give too much concern. That was until travelling down a long incline on overrun a glance in the rear-view mirror showed the road behind to be covered in cloud. The cloud, of course, turned out to be the smoke being emitted from the exhaust on the Range Rover, and now the owner decided that perhaps this oil loss should be investigated.

The problem turned out to be the plastic inlet manifold which had split. On this model the inlet manifold also doubles up as a cam-cover, and so the split in the manifold was allowing the oil from the camshaft area to be ingested into the system.

The job gets a two-hour labour time – and although this is a fair time, the amount of stripping down to enable easy removal of the manifold/cam cover and then fit the new one in place ensuring that the gasket face is smooth, and the cam cover is sitting squarely, does need to be done without rushing.

With the new cover/manifold in place and the engine all boxed up, the oil level was topped up and the motor given a quick run to ensure all appeared good.


The cover/manifold is tricky to replace due to the excess of wiring and pipes in the area, but once in place cured the problem.



BMW 3-SERIES

Misfire mystery

▶ This 2008 BMW 330i was not running as smoothly as would be expected of this 3.0-litre straight-six engine. With fault codes 0029D1 and 0029D2 showing up on the scanner the fault was looking at first to be cylinders 5 and 6.

When a physical check was carried out, it was found that the spark plug on number three cylinder was loose and the coil pack had been damaged, and this was the source of the misfire. This type of misinformation from the codes is something that is often encountered on the BMW as the engine control module will make adjustments to the length of time the injector operates for, to make allowances for faults in other cylinders.

On this BMW the problem on number 3 cylinder was allowing the mixture to be rich when detected by the O_2 sensor, and as a result, the ECU altered the mixture on cylinders 5 and 6 – the firing order of 1,5,3,6,2,4 meant this was the cylinder before and after 3 in the firing sequence – to be weaker to compensate, this then was resulting in the misfire codes showing the problem in cylinders five and six.

As the problem was quickly found with a physical check, this mystery was soon solved. The plugs along with a new coil pack on number three cylinder were replaced and the codes cleared.

Once the new spark plugs and coil pack were fitted, the Beemer was running smoothly as would be expected of the straight-six engine.

FORD FOCUS

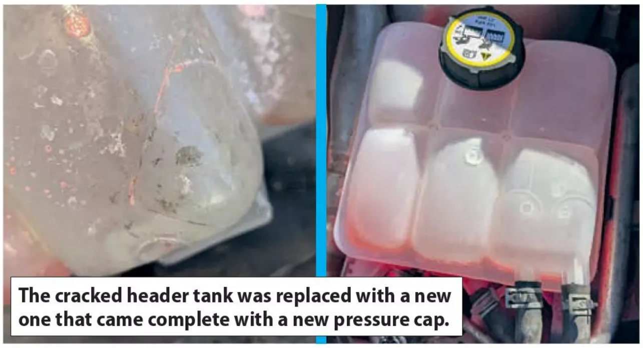
Dripping coolant

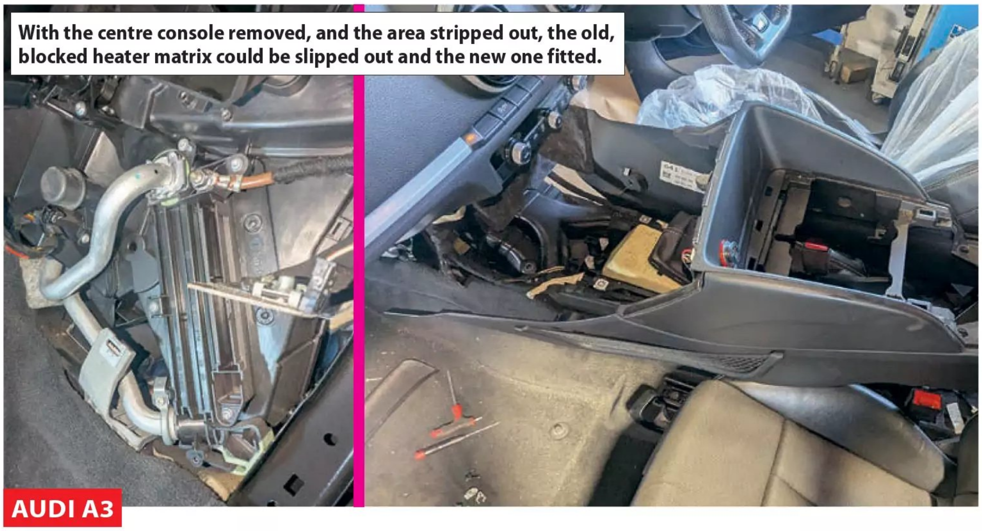
▶ The owner of this 2009 Ford Focus 2.0 had been able to detect the slight waft of a sweet smell emitting from under the bonnet but had not been too concerned. They then noticed that the cooling level was dropping over the course of the week. A quick glance under the bonnet did not reveal any obvious areas of coolant leaking and so they just topped up the reservoir and carried on.

The next check showed the reservoir down on coolant again but this time when checked a drip could be seen from under the vehicle in the area of the coolant header tank.

The Focus was booked in for the following week for me to check out. With the motor in the workshop, the plan was to carry out a quick pressure check, but this proved unnecessary as the dripping coolant could be seen coming from the base of the coolant header tank.

A new tank was ordered up and fitted, and the cooling system flushed and refilled with fresh coolant. The new header tank even came with a new pressure cap ensuring all was in tip-top condition and ready for the road again.


The cracked header tank was replaced with a new one that came complete with a new pressure cap.



With the centre console removed, and the area stripped out, the old, blocked heater matrix could be slipped out and the new one fitted.

AUDI A3

Heater blockage after silica pouch splits

▶ The owner of this 2014 Audi A3 2.0 TDI had been noticing that the heater temperature needed to be a little higher to keep the inside of the motor warm enough, but now even with the heater setting on full, the interior was not feeling the benefit of any heat from the system.

The Audi was booked in for investigation and it was soon discovered that the flow through the heater matrix was poor, and this was the reason for the lack of heat in the vehicle.

Having only recently rescued a silica pouch from a very similar vehicle, the first check was to look in the header tank of this Audi to see if the pouch was in one piece.

It was then spotted that the pouch had split, and the contents had been distributed into the cooling system. This was very likely the reason for the now blocked heater matrix.

The job of replacing the heater matrix on this Audi is given as 3.6 hours, but this time is unrealistic by the time the coolant is drained down and the trim is removed. On top of this the cooling system needed to be flushed through – and then after the new matrix was in place the coolant refreshed, and the system bled out.

MERCEDES-BENZ B-CLASS

Mirror indicator fail

The old failed LED lamp needed to be removed and so the door mirror casing had to be unclipped to allow access to the fixings.

▶ I can remember when LED lights were first being used to replace the old filament type bulbs in vehicle lights. The promise was that these LED lights would last the life of the vehicle with no worry about having to change any bulbs.

A few years out in the damp weather soon saw a few of the LED segment fail and it wasn't too long before I saw the first unit that needed replacing.

The cost is a lot higher than a bulb or the bulb holder and there is little that can be done to repair the failed unit.

The side repeater built into the nearside mirror on this 2011 Mercedes B160 1.5 petrol had failed with only a few of the LEDs operating, and a new unit was required. Thankfully this is only the lamp unit, but the problem is that the mirror housing needs to be disassembled to access the light unit fixing.

The plastic top cover needs to be unclipped, and this does need to be done with care to prevent either the paint getting scratched or the clips getting damaged.

Thankfully the process went smoothly, and the new LED unit was fitted and operating, allowing the outer mirror cover, to be refitted.

PEUGEOT PARTNER

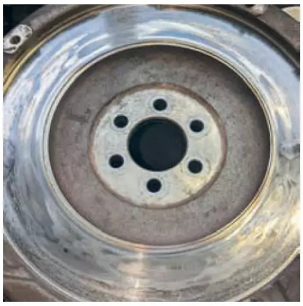
Clutch & flywheel skim

▶ The clutch on this 2016 Peugeot Partner 1.6 HDi and been a little juddery for a while, but now there were signs of slippage, and the owner understood the situation could not be left as it was for much longer. Booking the motor in for a clutch replacement, the new parts were duly ordered up to ensure that once the gearbox was out, the job could be turned around and the Peugeot put back on the road on the same day.

The job has a book time of 6.1 hours and so the Partner was brought into the workshop the previous evening and put up on the ramp so it would be cold and ready to work on first thing.

Getting straight into the job the next morning all was going well until the old clutch was removed and the condition of the flywheel was seen. The multicoloured and cracked surface could certainly not be left and fitting the new clutch would have been condemning it to a short life.

The flywheel was removed and taken to the local machine shop who very kindly agreed to skim the flywheel by the close of play that day. This meant that picking it up first thing the next morning, the flywheel could be bolted into place and the job finished before lunch. A bit longer than planned but still not a bad turnaround time.



The face of the flywheel had been damaged by the heat and fitting a new clutch without addressing the surface problems on the flywheel would have been shortsighted.

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Part SEVEN: **Martyn Knowles** visits the MX-5 specialists for a complete underbody rustproofing service.

Part seven of our MX-5 Mk3 project was to be the final episode. However, embarrassingly, the exterior bodywork still has wax remnants on it from when I started cutting back paint with a cutting compound and finishing with a top polish using a Milwaukee 180mm 18V brushless cordless polisher. Overspray of wax still lingers as I've yet to finish the job. The main reason I've not continued boils down to the fact I can't use a hosepipe to wash the bodywork down – we've had a hosepipe ban since mid-July – and the weather in October doesn't show much in the way of rain down here, so I doubt the ban will be lifted anytime soon.

I can (I will) take the MX-5 to the nearest car wash place, ideally one where I can wash it myself, drive back home and continue using a bucket of soaky water on each panel (if necessary).

Should be no more than a day or two's work, then an interior clean. Doing this work in November when the weather temperature is below 10° outside isn't something to look forward to, so I'm hoping for an October finish.

Other jobs

There are outstanding jobs to complete. We don't have a tyre inflater/sealant in the boot. There's provision for one, but it is missing. The MX5 Restorer guys gave me an OE pump, so I just need to gather the other bits from somewhere to create the kit. Or I could buy a new pump/sealant from the aftermarket.

The front brakes have started to squeak when cold. Hopefully I can find time to take them apart, clean and refit.

We had the aircon system regassed in August with fresh R134a. However, after taking gas into the system, no cold air emerged from the air vents. We would have to investigate further to see if there was a pressure switch problem or an open circuit somewhere. We didn't pay for the regas at the time as it hadn't worked. Then in September, as mentioned in my Editorial, I drove to Chichester in West Sussex. A 50+ mile drive – I took the MX-5 to get a feel of the new tyres and fully aligned suspension. All went well. On my next engine fire-up a week or so later, I could hear the aircon compressor clicking in. I'd not heard this before.

RUSTPROOFING UNDERNEATH

1 Starting at the rear of the MX-5, Owen first removes both rear wheelarches. A variety of plastic clips secure it in place. Most of them break on removal and The MX5 Restorer guys keep new ones in stock. We had already removed the complete exhaust system when doing the clutch change the day before.

2 The rear bumper is tackled next. First there's a bolt in the inner wheelarch to remove (each side), then into the boot area, the inner rear panel is quickly taken off to reveal the rear lights. After unclipping the bulb connections, each lamp is held on with three 10mm nuts. You can see the wax overspray still covering the rear bodywork.

3 The rear numberplate is taken off, which reveals two T30 screws for the rear bumper to undo. The bumper also has some plastic rivets holding it down in the far corners (under where the rear lights sit).

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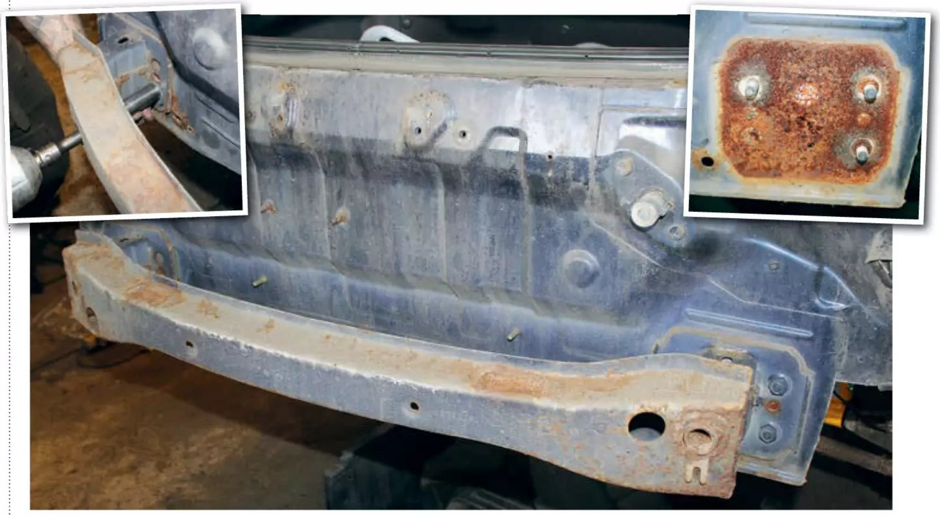
Setting the climate control to fully cold, the air slowly became colder and colder. It was now somehow working! I can only assume the air-conditioning hasn't worked for many years and the compressor was seized. Operating the aircon button for that 100-mile round trip forced it into working!

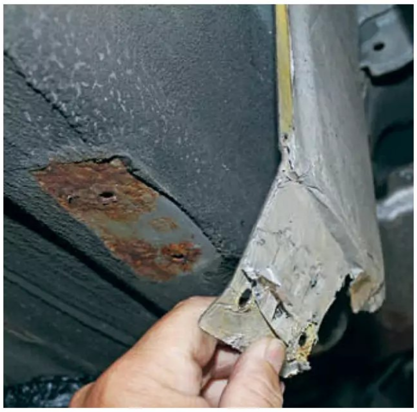
So the jobs covered in this issue show us how the professionals rustproofed our car. All MX-5s like to rust and we've been fortunate to have a higher-mileage car that doesn't need any welding underneath. I personally believe that cars that sit around covering low-mileage are more prone to having rain water sit in places for long periods, whereas a car that's driven daily will drive water out of crevices and eventually dry out any moisture.

The rustproofing job is a task you could undertake at home, but here we had use of a two-post ramp, compressed air to work air tools and air to force the Dinitrol fluid into each area. The MX5 Restorer in East Sussex typically charge £800-£900 for this service.

4 The bumper will slowly try to fall from the bodywork, so with the last plastic rivet removed, it can be held aloft by just one person. Being colour-coded the bumper should be stored in a safe place, so that it doesn't get scratched and/or you potentially fall over it!

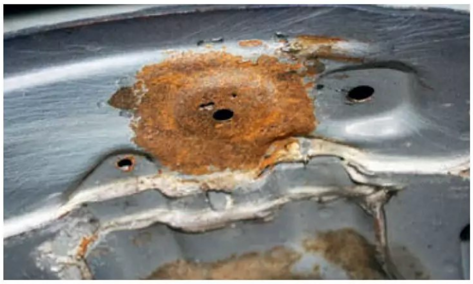


5 With the rear bumper off we now tackle the crash bar. Held on with six (three each side) 17mm bolts, it is easy to remove (and lightweight to lift). We noticed rust behind each removed bracket, and a small hole behind the nearside bracket.



6 Up around the middle of the floor pan is this heat shield that secures to the underbody. We need this removed to get to the area beneath. As you can see it is rusty.

7 Onto the front wheelarch. A simple wire brush is used first to the areas we can see that need rust removal. But for more serious rust, The MX5 Restorer guys use an air-powered needle scaler that strikes the rust, chipping it away quickly from the surface. Owen is seen here working within the front wheelarch, where he tackles suspension components as well as rust within the arch.



8 ◀ A rusty area in the front wheelarch just in front of the suspension strut. The needle tool has created a small hole close to the plastic rivet locating hole.

9 ▶ An endoscope is used to probe the inner sill area. First a rubber bung is removed from the end of the sill and we can inspect the area. There was rust in there, but we feel that we have just caught this in time.

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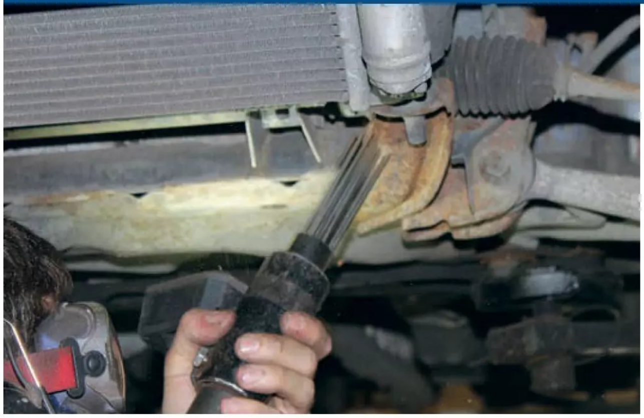
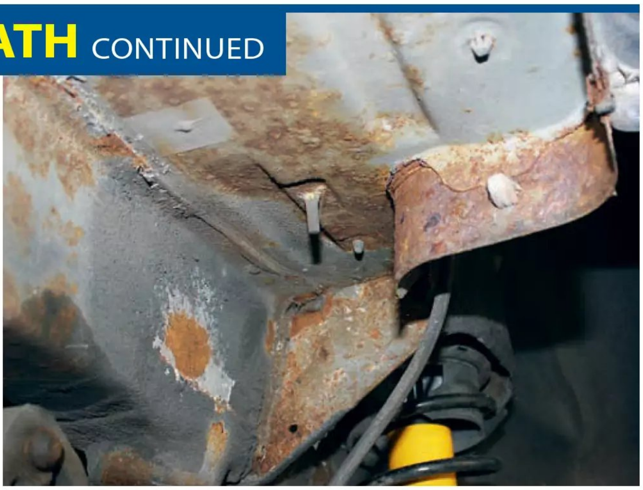
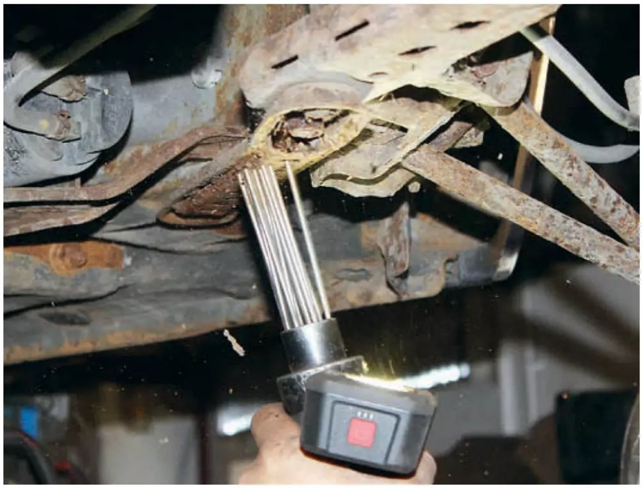
RUSTPROOFING UNDERNEATH CONTINUED



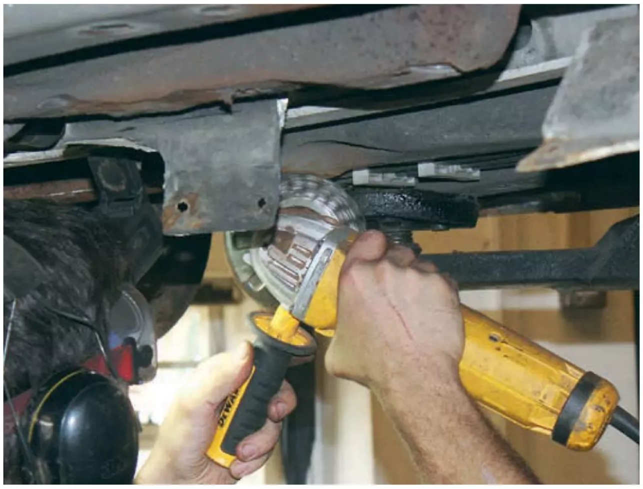
10 Still at the front of the car, Owen finds areas that require the needle treatment, here below the radiator and on the front suspension components. Proper eye care and ear defenders are a must!



11 Behind the rear shocks on both sides is this rusty area. A combination of wire brushes and using the needle scaler gets as much surface rust as possible removed.



12 Experienced operator, Owen, skilfully uses a LED torch in his hand that he's using to move the needle scaler around the area. These support brackets can be removed, or if they are badly corroded, renewed.



13 Certain areas require work using an angle grinder, like the bottom edge of each sill, chassis sections, and cleaning up the rear crash bar and underside large support bracket.

14 For the inner arch areas, Owen goes back to using the wire brush. Fortunately, I'd power-washed the arches prior to my visit.

15 After three hours of derusting, masking is next. Around the wheelarches, suspension components and bottom of the sills. Anywhere we don't want the rustproofing fluid to come in contact with.

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16 First we use Dinitrol RC900 – a high-performance rust converter. It actively converts rust on the substrate into a stable organic iron complex (according to the Technical Data Sheet).

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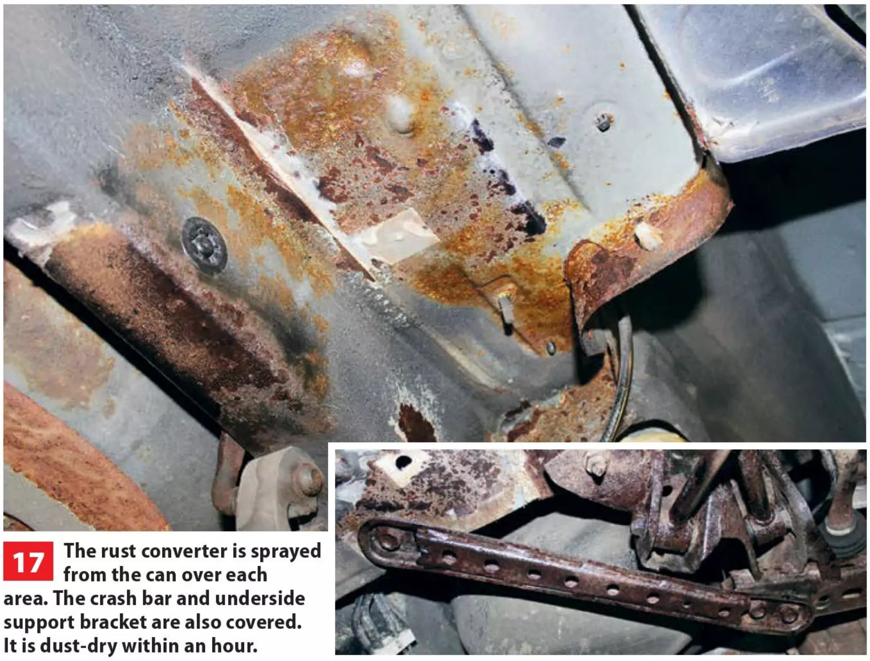
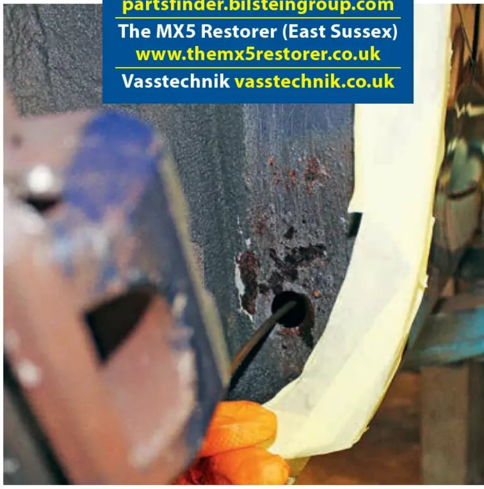


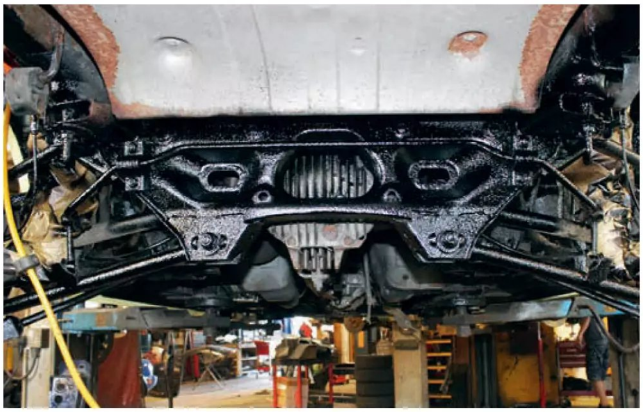
17 The rust converter is sprayed from the can over each area. The crash bar and underside support bracket are also covered. It is dust-dry within an hour.



18 Bilt Hamber Dynax-S50 is the choice for firing anti-corrosion wax into the sill areas and other cavities underneath. The MX5 Restorer guys use an extra length injection lance to get into the full length of the sill. Voids and box sections are also given a squirt of the Dynax-S50.

19 For the final rustproofing top coat, we revert back to Dinitrol 4941/CAR. Its base material is bitumen, so the cans are placed in a bucket of hot water for 20mins prior to us starting our work.

20 As you can see, the Dinitrol can is feed by an airline to produce power to the spray. Owen adjusts the spray pattern to suit.



21 The rear subframe and suspension components completely covered in Dinitrol. I left our MX-5 to stand outside The MX5 Restorer's office for two days, to let it dry, before driving on the road.

22 To cover the areas where the two-post ramp sits, the car is dropped down onto small ramps on the ground. Then the operator will slide under with a creeper board and spray these sections.

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BMW 316i COMPACT RESTORATION

Part 3: **Andrew Everett** completes the budget 316i resto, and it passes its MOT test.

Last month, we completed the bodywork, and in this final instalment the various other issues are sorted. These are a loose driver's door card, Titanic style rear springs, equally rusty front brake backplates, plus a thermostat to cure the cool running, a rear coolant elbow as a preventative job followed by an engine service and an MOT test.

Lots of nonsense is talked about bleeding BMW cooling systems – 'jack up the front end, walk backwards whilst doing the Riverdance', etc. All you need to do is remove the bleed screw and add coolant SLOWLY. Add a litre slowly, leave it for three minutes to find its way, and repeat.

Eventually, the last job was done, and it was time for its MOT test. Bear in mind that I'd not really driven this Compact before (apart from around the block), so I was slightly worried – I needn't have been as it was absolutely fine. A wobbling front seat back at 50mph betrayed rear wheel imbalance that I had fixed post-MOT – whilst the rear wheels were off, I did an oil and filter change. Spurred on by the successful MOT result, I whisked it round to my local tyre and exhaust place and got them to regas the aircon. The first go didn't achieve much but the second go did, with 800 grams of R134a and some extra oil to revive various seals. Z3 and Compact aircon was never the best but it's better than nothing.

REAR SPRINGS

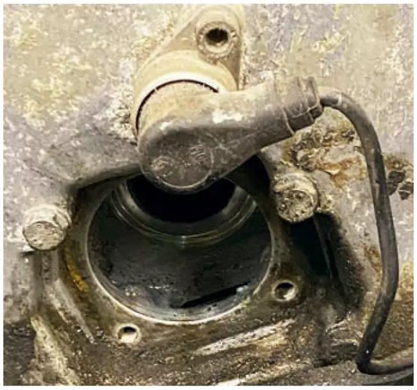
1 ▲ **They hadn't broken, but these KYB rear springs were seriously ugly – I couldn't leave them on. I had a pair of very clean BMW springs in stock so on they went. Start by removing the 18mm lower damper to trailing arm bolt – and disconnect the anti-roll bar on 318Ti models.**

2 ▶ **The springs may or may not need compressors – these certainly did. Fit the springs into the rubber seats and jack the trailing arm up enough to refit the 18mm damper lower bolt. Tighten these bolts to 100Nm when the car is on the ground with the suspension fully settled.**

THERMOSTAT

3 **This no name no blame aftermarket 'stat wasn't allowing the engine to reach full operating temperature so a new one from febi was ordered. They're pretty easy to change but make sure the 10mm retaining bolts all slacken – it's rare but they can break off in the head.**

4 Drain the coolant properly by unscrewing the blue drain plug at the base and decanting into a clean bowl – don't be the idiot that pulls the hose off and lets it go everywhere. Coolant can still end up in the front undertray so direct the coolant directly into your container.



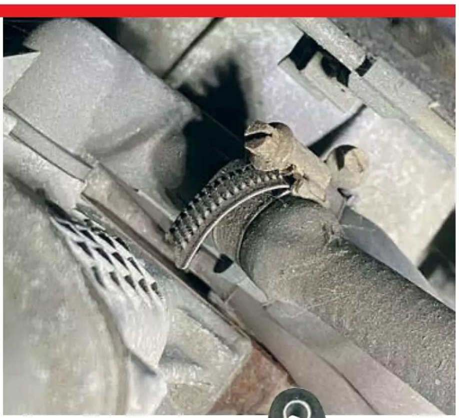
5 The thermostat is removed by unscrewing the three 10mm retaining bolts and the single hose clip after which it just pulls off. With it removed, take a few minutes to thoroughly clean up the cylinder-head alloy mounting area so that the new thermostat has a perfect seal.

febi
bilstein

6 Here is our new febi thermostat which looks identical to the genuine BMW part with the same grainy finish to the plastic. Refitting is easy – apply some grease to the new seal. The BMW part number is 11531437149 if you need to order one in. The 10mm bolts are nipped up to 10Nm.

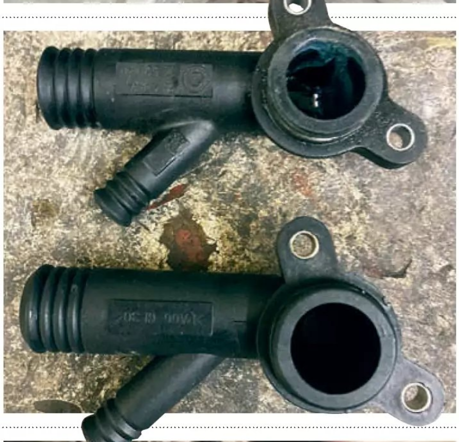
COOLANT STUB

7 ◀ With the cooling system drained, it made sense to inspect and replace the plastic coolant stub on the back of the head. These become brittle with age and leak. Access is limited so start by removing the heater air intake assembly – 7mm bolts and screws secure it.



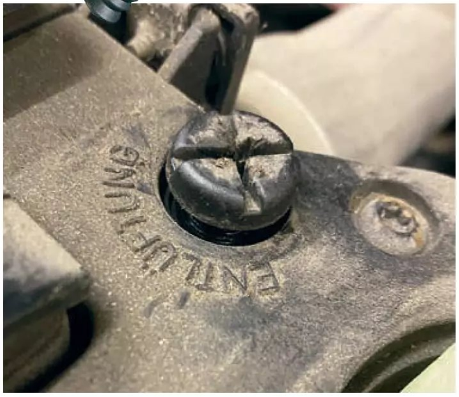
8 ▶ Look down the back of the engine and there it is. These are also fitted to the M44 16-valve 318Ti and Z3. It's secured by two 10mm bolts plus two hose clips (push-fit on E46 1.9 models) and ours looks bone dry. But I have a brand new one here so it might as well go on.

9 ◀ The best tool is a ¼in-drive ratchet and long 10mm socket as there's not much room. The hoses need a bit of a wriggle to get off as well. With the bolts out, remove the stub by trying to turn it – a bad one will break off in the head – easy to remove the broken bit though.



10 ▶ Upon removal, the old coolant stub was a genuine BMW replacement date stamped 2014 – oh well. I will keep it as a spare anyway. I can't think where I got the new one from, but they are only £15 or so from BMW, so buying from the dealer saves you waiting for the postman.

11 ◀ Before fitting the new part, take time with some 240-grit emery paper to really clean out the bore in the cylinder-head that the coolant stub O-ring fits into – it needs to be super clean in order for the new stub to seal properly. The BMW part number for the O-ring is 11511739691.

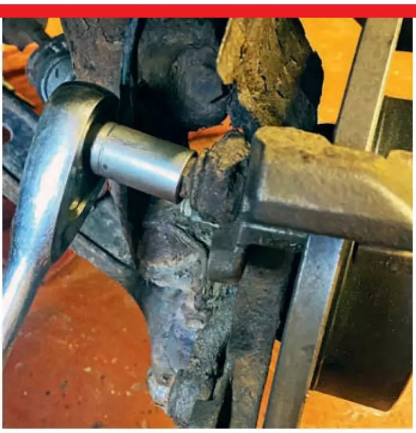


12 ▶ Add coolant a litre at a time – slowly – leaving a few minutes in between litres with the bleed screw removed. When you think it's full, set the heater to hot with the fan on 2. Start the engine and hold it at 2500rpm until warm air comes from the vents. Turn it off, release the cap SLOWLY and add more coolant to the level. Recheck after five miles or so.

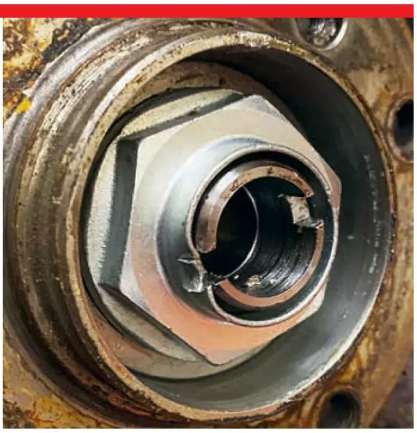
⇨

BRAKE BACKPLATES

13 These were as ugly as the rear springs and the driver's side backplate was about to fall off. These require removal of the front hub to replace them, and you'll need a 46mm socket and preferably a ¾in breaker bar although a good ½in breaker bar should do the job.



14 The caliper needs to come off which is easy enough. What's not so easy is getting the two 16mm caliper carrier bolts out as they are tight (110Nm) and normally rusty. Very often they round off and you must hammer a 6-point 15mm on. New bolt part number is 34116772428.



15 This is the big 46mm hub nut. The inner edges are staked over on one side – there's no need to buy a new nut. Just refit the old one, torque it up to 290Nm (that's why a ¾in breaker bar is preferable) and stake over the other unused side of the nut. It's not coming undone!

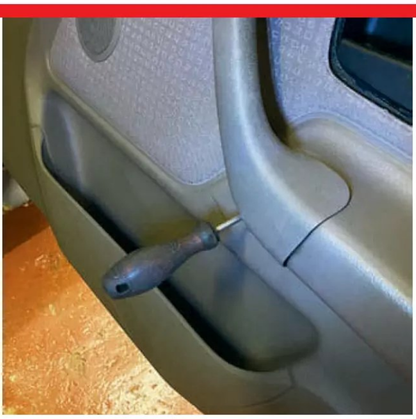
16 When you pull the hub off, you will leave the inner race collar behind. No problem – just drift it off with a hammer and screwdriver and clip it back into the hub. Three 10mm bolts secure the backplate to the strut – there is also a dust protector (31206777788) that will not come off intact.

17 Twenty-seven British winters had made a real mess of the original backplates and a new febi pair makes a real difference and impresses the MOT man. You can also rub down the new ones and use a satin black aerosol to put another few coats of paint on, but we didn't as they were OK as they came.

18 Bolt the shiny new febi backplate on followed by the aforementioned dustshield, the hub, disc and caliper. Doing this job is made more involved by the age of the car and the inevitable rusty bolts – it's worth ordering in all the new bolts and bits from BMW beforehand.

DOOR TRIM REPAIR

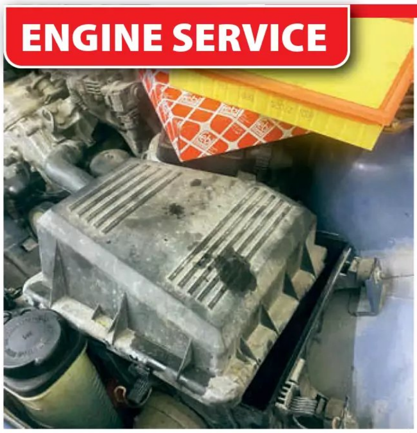
19 E36 door trims are well-known for the plastic mounting posts – which are glued to the door card – from breaking loose. This had happened to our car, so the door trim panel needs to be removed and have the posts glued back on. Only Araldite Rapid works – nothing else.



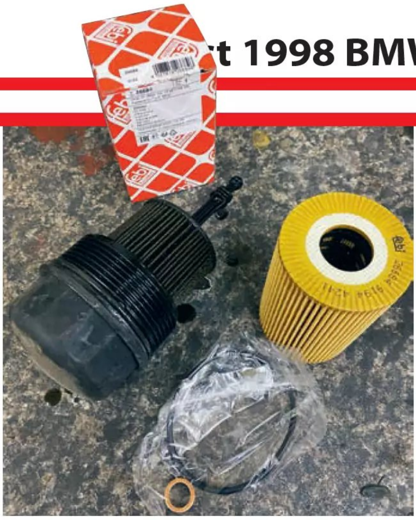
20 Remove the door card by removing two Torx screws – the short one lives up a channel in the door pull as shown here and the longer one behind the mirror switch on the driver's side and the black plastic insert on the passenger side, plus popping off any remaining clips.

21 The posts are numbered to the door trim so glue each one the right way around to the glue number witness marks on the door card. Araldite needs a couple of hours to set and the longer the better. Any posts that haven't broken off should be removed and reglued.

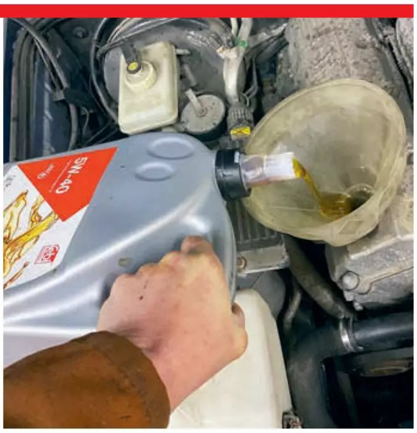
ENGINE SERVICE



22 The air filter is quickly and easily replaced – just four clips and the upper section lifts up and the filter element removed, but to be fair the old one was still pretty clean. It was put back into the febi box and kept as a spare – well, every pound is a prisoner!

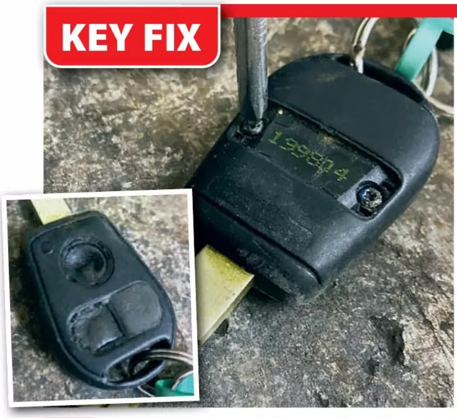


23 These engines use the screw on plastic filter housing cap that ideally needs a special metal tool which I have but couldn't find – I very carefully used a big pair of gas pliers instead. The filter pulls off the plastic spike – and don't skip replacing the two O-rings on the spike.

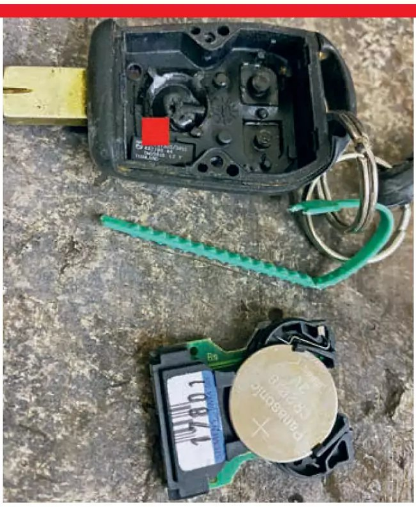


24 It's not essential, but before fitting the new filter and with the old oil drained, I always pour a litre of new oil into the filter housing before fitting the new filter and cap. It helps to prime the oil pump. I used just over four litres of febi 5W-40 semi-synthetic oil.

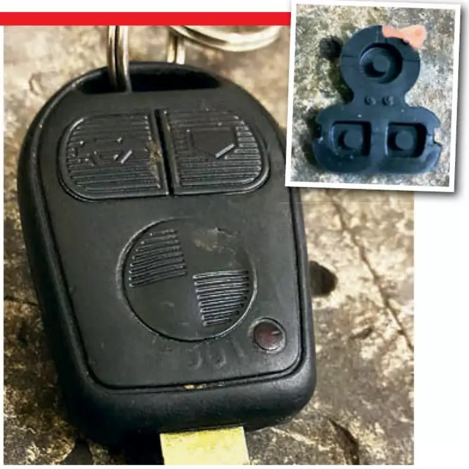
KEY FIX



25 This E36 came with factory-fitted remote central locking with key buttons. These had turned to mush. Not to worry though because you can buy new buttons for a fiver on eBay. Start off by flipping off the small cover on the back of the key to expose the two screws that hold the rear cover on – and then remove the two tiny crosshead screws with a suitable screwdriver and put them somewhere safe.



26 Use a flat-blade screwdriver and lift out the battery unit with the key remote chip and CR2016 battery. The RED square shows where the EWS immobiliser chip is – that talks to the engine ECU. It's well glued in.



27 The new buttons, like the originals, are a one-piece part with all three buttons and the red warning light. Remove the old buttons and carefully fit the new ones, making sure the lip around the new button's seats around the holes in the key casing. That's better! 20 minutes work has transformed that manky old key.

SUMMARY

I hate MOT tests. Even so, that first drive in a newly resurrected car is the best way to find any problems. Apart from rear wheel imbalance that I cured later that day, it drove fine and passed its MOT test with no advisories – not bad for a 27-year-old car rescued from a grisly fate.

▶ Even if you do the work yourself and have favours and mates' rates, restoring cars is expensive. Was it worth it? Well, a car that was probably going to be used for parts and then weighed in for scrap is back on the road and it kept me busy for a few weeks. The car in its current condition is worth a couple of grand. A manual BMW 318Ti would be worth more but an automatic with aircon and parking sensors is quite a pleasant thing to drive. You can't save them all of course, but they aren't making them anymore.

COSTS

Purchase price	£337
Recovery	£200
Tyres	£60
Tailgate struts	£15
Paint panels	£170
Key buttons	£5
Anti-roll bar mounts	£90
Paint/materials	£20
MOT test	£30
Rear wiper blade	£5
Spare wheel	£27
A/C regas	£30
Oil	£38
Oil filter	£6
Air filter	£7
Brake backplates	£52
Thermostat	£42
TOTAL	**£1134**

Kia Sorento TIMING CHAIN

A bit of rattle when starting a 2.2 CRDI Kia/Hyundai diesel might sound like hydraulic tappets filling, but the cause is almost certainly a worn timing chain that needs renewing before it fails. **Peter Simpson** reports.

Though not really the last word in refinement, the Kia 2.2 CRDi diesel engine, as used on the Sorento, along with the Hyundai Santa Fe is, by and large a pretty tough and durable unit. There have, granted, been a few instances of major failure, but most of these can be attributed to lack of maintenance, and there have been many cases of looked-after examples running to 160-180k or more.

Kia was the first manufacturer to offer an extremely comprehensive seven-year warranty in the UK, and cars tend to well-maintained during that time, due to the warranty being conditional on it. But after that, neglect is far from uncommon; not least because Kias are bought generally by people who aren't actually that interested in cars and don't always recognise the importance of regular oil changes.

There is, however, one significant weak spot – the timing chains. The usual symptom of wear is a rattling sound for two or three seconds on cold startup; it sounds similar to hydraulic tappets filling with oil. The cause, however, is actually a worn timing chain rattling until the tensioners have expanded sufficiently to take up the chain's wear-related stretch. Typically, chain wear can reach this point anytime after about 80,000 miles, though of course a lot depends on maintenance. Dirty oil is a major contributor here.

Sometimes, the issue will 'disappear' temporarily following an oil change, and sometimes renewing the top tensioner and guides on their own will make the symptoms disappear for a few months. This might be long enough to sell a vehicle and get past a dealer's six-month statutory comeback period, but the chain will still be worn, the symptoms will return, and the only proper long-term solution is renewal of both chains.

Though the chains can be renewed with the engine in situ, it's still a fairly big job; book time is 7.5 hours, but in practice it will probably take longer without main dealer level tools and equipment. I'd think of it as something to do over a weekend, or a week of evening home-workshop sessions. It is, though, something that a reasonably experienced DIY mechanic could tackle themselves.

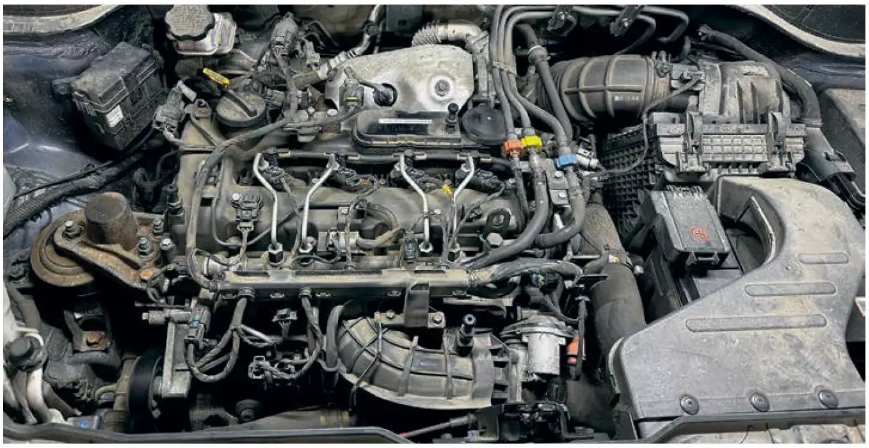
On top of the labour, a decent quality chain kit is likely to cost around £300, meaning a four-figure garage bill for most once VAT and the oil change are added in. This, unfortunately, is more than many people are willing to spend on what is basically a precautionary repair; one that's meant to prevent something from happening rather than because it has happened.

Be in no doubt however, that a rattling chain will only get worse if left, and if it does break you'll almost certainly need another engine.

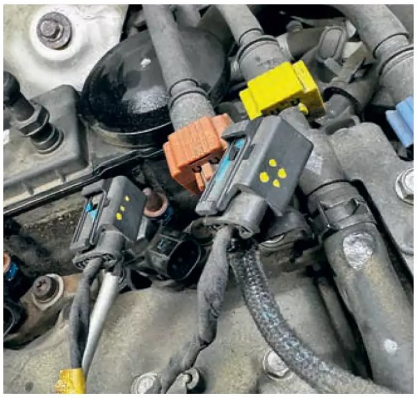
Overview

The chain layout is straightforward enough. There are two chains, but each links just two sprockets. The top one runs from the rear camshaft (the two camshafts being linked by a pair of cogs) down to a double sprocket half-way down which operates the high-pressure fuel pump.

The lower chain also comes off this double sprocket and goes down to the crankshaft. Each chain is tensioned by its



1 **Start by removing the engine cover (a snap-fit on and off). While underneath, if it's still present, you need to take the engine belly-tray off in order to access the sump. For safety, you should also disconnect the battery earth lead. Don't forget to check you have the radio code or use a plug-in code saver.**



2 **Next, on top, you need to unplug and move aside the wiring looms leading to the injectors and glow plugs. As you can see, it's sensible to mark which connector goes to which cylinder using the time-honoured 'yellow dots' method.**

own hydraulic tensioner, and each run through two nylon guides. Replacement crank and fuel pump sprockets come with the kit along with tensioners and guides, but the cam sprocket wears less because it's bigger and doesn't generally need renewing unless the chain is being changed for the second time.

The chain renewal procedure involves setting the engine to top dead centre on number one cylinder, and to turn the engine you'll need to extract the injectors. If you're doing this job on a vehicle you're planning on owning long-term I'd spend a few extra quid having the injectors tested and overhauled if required while they are out; this is needed, typically, at about the same time/mileage as a chain change.

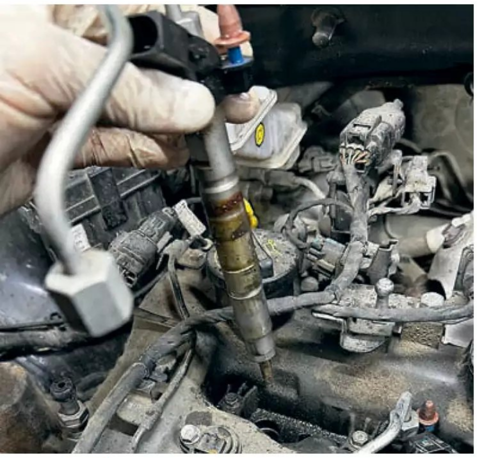
In any case, you'll need to renew the copper sealing washers. Turn the engine by turning the crankshaft only (not the cam or fuel pump), and only in the direction of running – ie. clockwise when looking into the bay from the offside.

In terms of access, you'll need to take off the camshaft cover on top – this involves a certain amount of general deck-clearing. You'll also need to remove the offside engine mount, auxiliary drivebelt and chain covers at the side, while underneath the oil sump and offside engine mount, and support the engine using a jack or similar. A certain amount of component removal is also needed at the top. It's also, of course, important that no part of the engine is turned while either of the chains is off. The timing marks on the chains and sprockets are clear and unambiguous.

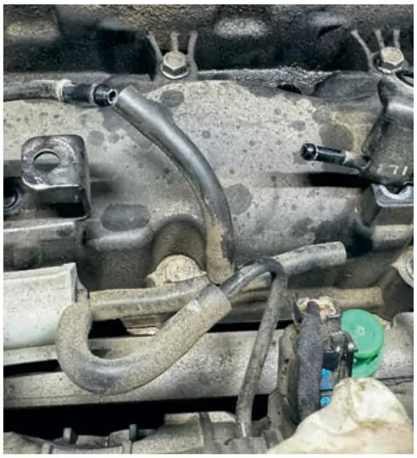
Other than that, the job is one of those which takes time mainly due to the number of tasks needed rather than their difficulty. The only slightly uncertain part is removal of the bottom and fuel pump sprockets; here my advice is to use a puller rather than mess around trying to lever them off.

The official instructions also recommend using a crankshaft locking tool that fits on via the starter motor aperture, but in practice this isn't essential so long as you are careful to ensure that the engine really is at the correct TDC on number 1 at the start and doesn't move. As well as the marks shown in the photos, there's an additional TDC marking on the crank pulley.

Our photo-sequence shows the key stages. On this occasion I'd like to thank Sleaford-based Hedaux Motor Company (01529 297280) for not only doing the work but also, because I was away getting married while it was being carried out, for taking the accompanying photographs. Hedaux have recognised that timing chain issues are becoming more prevalent, and have made something of a speciality of renewing them.



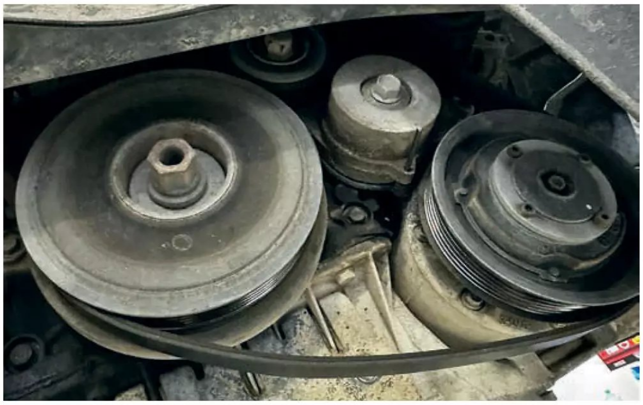
3 As the engine needs to be set to TDC on number 1 cylinder, the injectors must come out to remove compression. This, obviously, involves disconnecting the fuel feed pipes, but this has to be done at the fuel rail so the cam cover (secured by a series of 10mm bolts) can come off. The injectors themselves are each held down by two T27 fixings.



4 With the fuel pipes disconnected from the tank, it's good practice to cap off the pipe holes, to prevent muck getting inside; suitable plastic caps are inexpensive online or from good motor factors. As you can see, extracting the injectors etc., also involves disconnecting some pipework; do this carefully as the plastic connectors may be brittle.

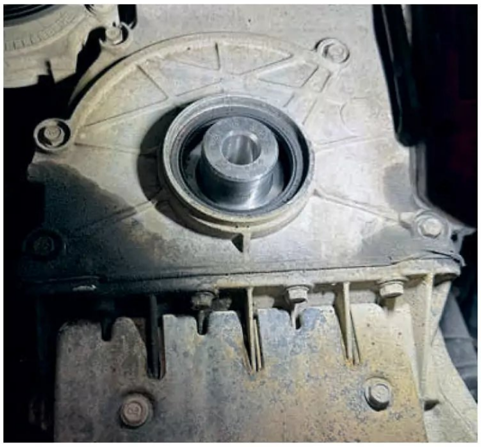
5 Finally on top, a bit more general deck-clearing is needed to get the camshaft cover off. There isn't room to show everything, but it is all pretty obvious, though a few digital photos before and during dismantling will help you get it all back as it should be.

6 Work now moves down to the offside wheelarch. Remove the wheel, followed by the access cover on the bottom right, and you'll see the auxiliary drivebelt. This must come off; do this by moving the tensioner upwards to take the tension off, and then locking it in position with a suitable pin – an Allen key is a common choice!



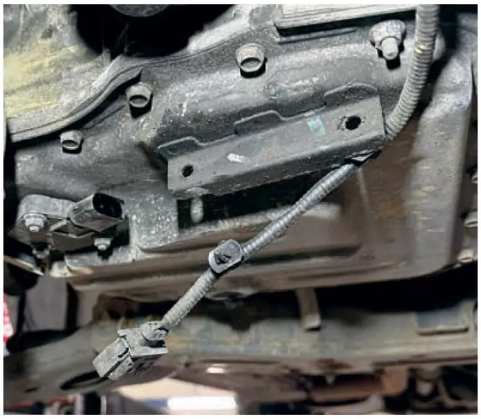
7 The loose auxiliary belt, showing the idler locked off-tension, allowing the belt to be unthreaded. As their service life is similar to the chain's, it's good practice to renew the belt, tensioner and idler pulley when changing a timing chain, unless these have been changed previously.

Kia Sorento 2.2 diesel timing chain swap



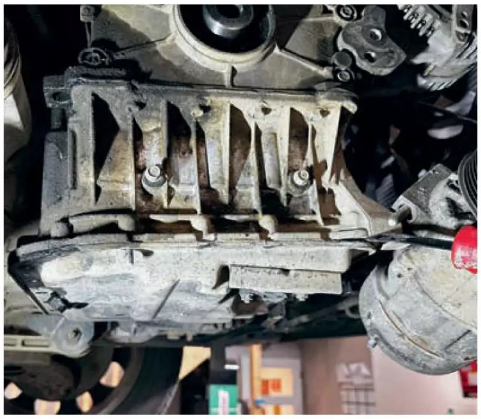
8 ◀ Removing the bottom pulley is, as usual, either very easy or very difficult, though in this case, slightly unusually, a standard socket set should cover the 22mm centre bolt. Ours actually came off without too much difficulty. If levering is needed, do it evenly on each side; it's a tight fit and will stick if attacked from just one side. This is it off.

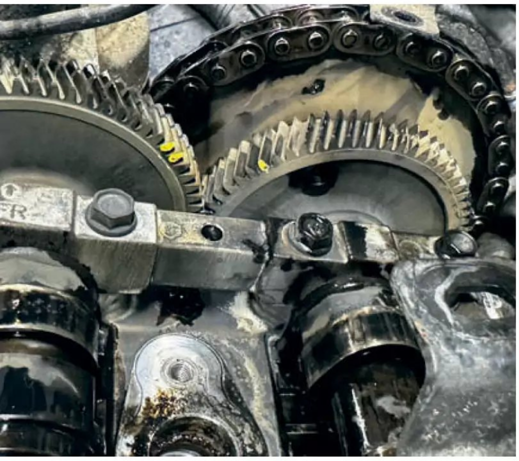
9 ▶ Unlike a dry timing belt, timing chain removal often involves dropping the sump, as part of the chain's lubrication is provided by it passing through the sump oil. After removing the under-engine belly tray, the oil has to be drained out; total sump capacity is 6.7 litres.



10 ◀ As on top, sump removal also requires a bit of deck-clearing. Specifically, the aircon compressor has to be unbolted and moved aside – fortunately you don't need to disconnect the gas-filled side. This is the wiring for the electronic low oil level warning, which also must be unplugged.

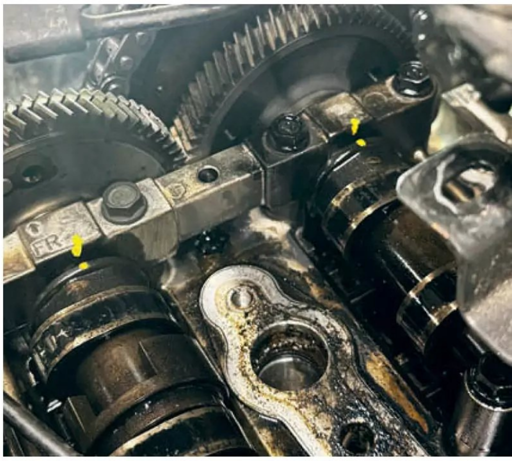
11 ▶ Taking the sump down; with the various 10mm securing bolts undone, you can carefully lever the sump down and off. Though the rubber-type gasket is pretty sturdy, I'd still recommend fitting a new one on reassembly.

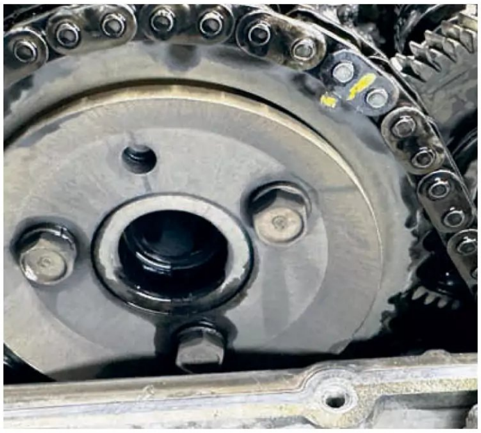




12 ◀ Next job is to set the engine to TDC on number one cylinder. The timing marks are all pretty clear and unambiguous; at the top the camshaft marks need to align so that the single driven cam is between the two on the undriven one. To turn the engine, refit the bottom pulley's bolt, and turn it only in the normal direction of travel – clockwise when viewed from the offside. Do not try to turn the engine from the cams or any other sprockets.

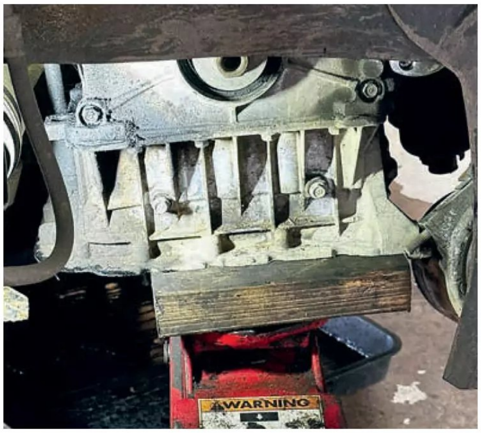
13 ▶ There is, though, one issue aligning the camshaft marks; when they are aligned they are hidden behind part of the head casting! This isn't actually as big an issue in practice as it sounds, as you can still tell when they are in the right position, but these alignment marks on the cams confirm when the setting is correct.





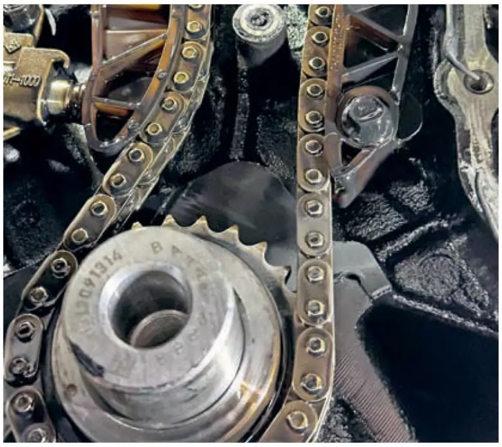
14 ◀ There are also alignment marks between the chains and spockets which need highlighting; this is the top one, viewed from the cars offside.

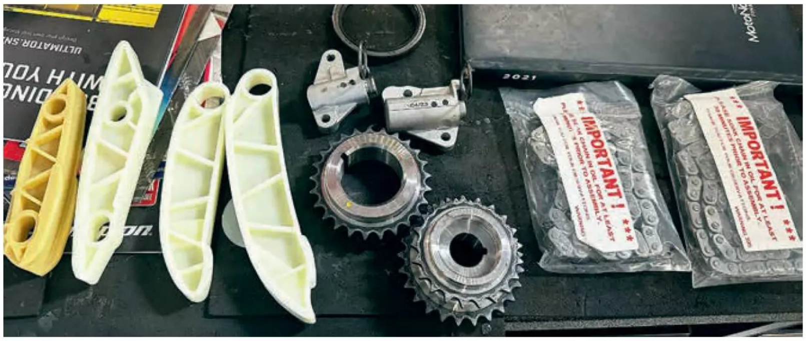
15 ▶ As is not unusual, to remove the timing chain cover you have first to take the offside engine mount off. To support the engine, put a trolley jack under the engine edge with a wooden block between jack and engine to prevent metal-to-metal damage. Then raise the jack just enough to take the weight off the mount.



16 ◀ The engine mount comprises three parts. First is the mount itself, one end of which attaches to the body and the other to a cross-bracket running from the mount itself to a second bracket that's bolted to the engine and runs in front of the cover.

17 ▶ With the covers off, the chains come into view. As explained in the main text both are simple enough, running between just two sprockets each and meeting at the high-pressure fuel pump. Each has a hydraulic tensioner plus a pair of nylon guides. This is the lower chain.



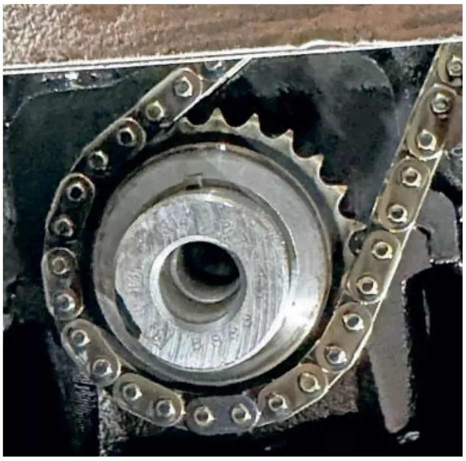


18 Contents of the timing chain kit – two chains (in sealed bags) four nylon guides, two tensioners, new crank and fuel pump sprockets and finally a new oil seal for the lower timing chain cover.

19 To remove the chains, you first de-tension them. Do this by pushing the tensioner plunger back in (as the chain's being renewed due to wear the tensioner will most likely be at or near its maximum stretch) and then lock it using a suitable-sized pin. This is the top chain, which comes off first.

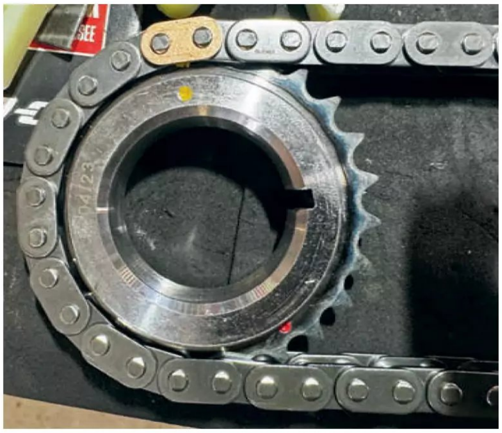
20 ◀ Once retracted, the timing chain tensioners can be removed, followed by the four chain guides. The two opposite the tensioners, one of which is shown here, are each fixed and secured by two bolts each. The inner ones however move with the tensioners, and pivot on a single central mount.

21 ▶ Once they've been de-tensioned, you can remove the old chains, followed by the crank and fuel pump sprockets, both of which are renewed with the chain; the cam sprockets are bigger so don't generally wear as quickly. Getting these off generally requires use of a universal-type puller. Note that the crank sprocket's keyway, seen here, is at 12 o'clock when the engine is set correctly.



22 ◀ Once the chains are off, it's vital that you don't move the crank, cam or fuel pump at all until the new chains are in place. While the decks are clear it is, however, a good idea to give the block/chain cover mounting surface a clean-up using a suitable light abrasive.

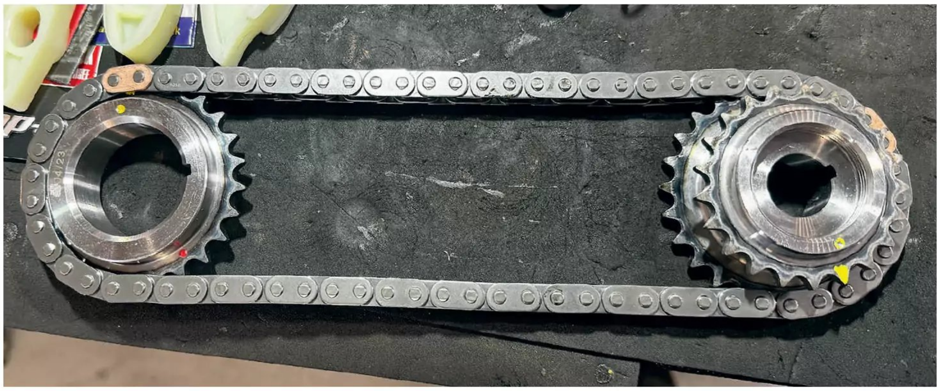
23 ▶ Fitting the new chains – the new bottom one goes on first and is best set-up on the bench and fitted as a complete assembly, Align the spot-marks on the sprockets with the coloured chain links like this. This is the crankshaft sprocket.



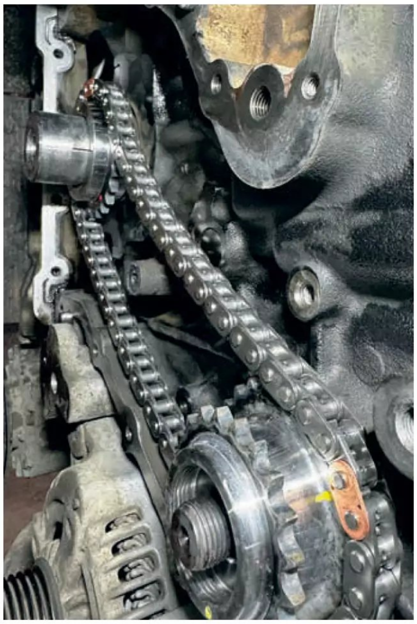
Kia Sorento 2.2 diesel timing chain swap

TORQUE WRENCH SETTINGS

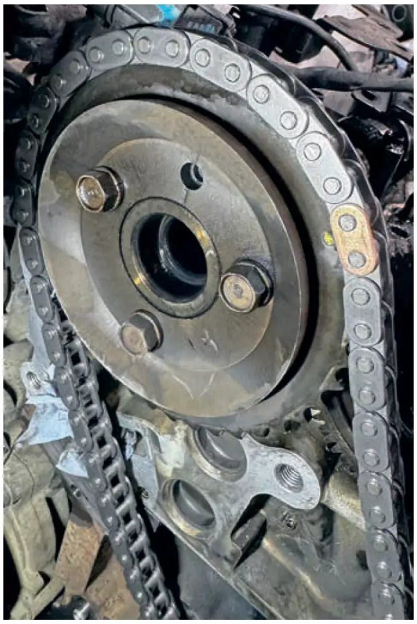
Bottom Pulley Bolt	**196**Nm plus 60° turn
Fixed chain guide bolts (x4)	**10-12**Nm
Fuel pump sprocket bolt	**79-93**Nm
Moving chain guide bolt (x1)	**29-31**Nm
Tensioner mounting bolts (x4)	**10-12**Nm



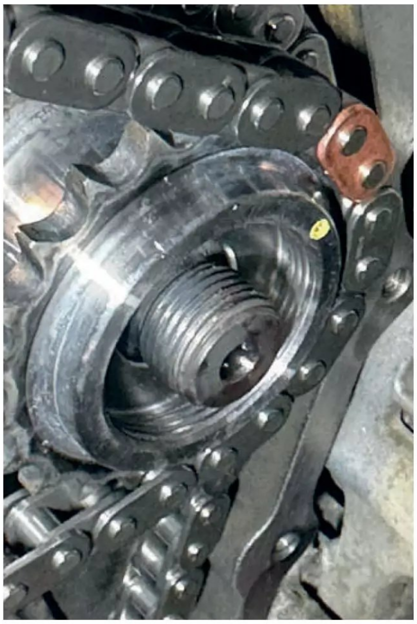
24 ◀ The lower chain assembly ready to be fitted. The double fuel pump sprocket has, of course, two spot marks, one for each chain, and the lower chain goes on the larger, rear, set of teeth.



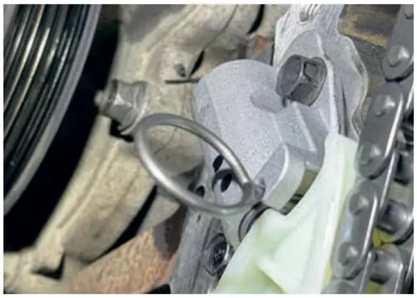
25 Bottom chain in position, showing the alignment marks for fuel pump sprocket. It will, of course, be quite slack at this point, before the tensioner and guides are fitted.



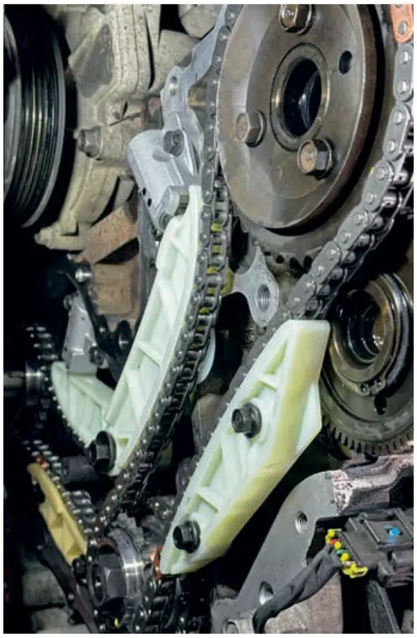
26 The top chain goes on next; here it's a case of fitting the chain to sprockets that are already in place. This is the camshaft sprocket alignment marks…



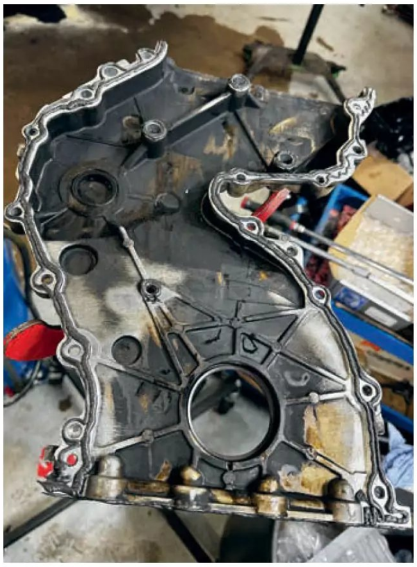
27 …while this is the top chain's marks on the fuel pump sprocket. Sprocket securing nuts have to be set to the correct torques – see separate box (above).



28 With both chains fitted, the tensioners and chain guides go on next. The tensioners are supplied fully-compressed. Set them by pulling out the pins with ringed ends once both tensioners, and all four guides, are in place.



29 ▶ Upper chain tensioner and guides in position; torque all sprocket, tensioner and guide fixings to the figures given in the box-table. Note especially that the bottom pulley setting is very tight – 196Nm is not a misprint – and that while the tensioner and fixed guide bolts go only to 10-12Nn, the pivot-bolt for the two guides that the tensioners act on is significantly tighter, at 29-31Nm.



30 Timing chain cover prior to refixing. We renewed the bottom oil seal as it looked a bit worn – at £10-15 it would have been a false economy not to have done so.

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Ian Cushway searches out **new** and **used** parts prices

Ford Focus Mk4

Two decades on from the first Focus, the Mk4 built on the original's reputation for value, excellent handling and cheap running costs. And now, prices start at under £5000.

We've always been big fans of the Focus. And since the first one took the family hatch sector by storm way back in 1998, each subsequent generation has built upon on its original winning formula of sharp styling, great dynamics, proven engines and high levels of safety.

After two decades and over seven million Focuses globally, the Mk4 has successfully carried on that trend with its wide choice of zesty engines, low running costs, its excellent driver experience and build quality that truly equals that of its more upmarket brand rivals.

Arriving in September 2018, the Mk4 was available as a five-door hatch or estate with a variety of engines based on the punchy 1.0-litre EcoBoost petrol unit as well as a choice of diesels, ranging from the 94bhp 1.5 to the rapid 148bhp 2.0-litre.

In 2019, the Focus ST was added to the line-up in storming 276bhp 2.3-litre petrol guise. There was also a 124bhp or 153bhp mild-hybrid 1.5 available from June 2020.

Inside, this era Focus is ergonomically spot on with the various bits of switchgear feeling solid and falling nicely to hand. It feels pretty spacious, too, and the extra 5cm wheelbase over the Mk3 is evident in the generous amount of rear legroom which is easily big enough for three adults. Bootspace is on par with other cars in the class; there's 443-litres with the seats up and 1320-litres with the rear pews folded flat. The estate trumps that of course, offering 728-litres and 1620-litres respectively.

The Mk4 underwent a mild facelift in October 2021 when it received a bigger Blue Oval logo in a restyled grille, more svelte headlamps and an even bigger 13.2in infotainment screen, before the model was discontinued earlier this year after a total of 27 years in production.

As one of the best-selling cars of all time, it's a car that's difficult to find fault with. That said, you need to consider which engine is likely to suit you best and not skimp when it comes to spec.

Engine component prices

OIL FILTER
Main dealer £20.38
Independent from £8.12

WATER PUMP
Main dealer £230.50
Independent from £73.72

DIESEL PARTICULATE FILTER
Main dealer £1658.40 plus £360 surcharge
Independent from £400 secondhand

Engines

The 1.5 EcoBlue diesel has a traditional 'dry' cambelt which should be replaced every 10 years. The oil service interval is every 10,000 miles/12 months. The oil pump is direct-drive and

For ultimate load lugging performance, pick the spacious estate.

Brake component prices

FRONT DISCS (PAIR)
Main dealer £223.42
Independent from £103.38

FRONT PADS
Main dealer £130.68
Independent from £43.69

REAR BRAKE CALIPER
Main dealer £258.22 plus £60 surcharge
Independent from £90.99

Steering/suspension component prices

FRONT SUSPENSION SPRING
Main dealer £59.48
Independent from £48.97

there's a small 7mm chain between the two camshafts. There's been some reports of this breaking, but it's not common.

The three-cylinder 1.0 EcoBoost petrol engines employ a timing chain to drive the camshaft and a small wet belt to drive the oil pump. There's been numerous reports of these wet belts snapping or causing fatal oil contamination, made worse on cars with the autobox where the belt tensioner tends to fail too. The secret to help avoid problems is to use the correct engine oil (WSS-M2C948-B spec), carry out frequent oil and filter changes, avoid short journeys and refrain from using any form of engine flush which will damage the belt. The service interval for the wet belt for the oil pump is 144,000 miles and might be as much as £2000 to get done, so bear this in mind if viewing an EcoBoost approaching this mileage.

In general, therefore, the diesels get the thumbs up when it comes to reliability – though as always, watch for DPF issues, especially on cars that have had a lot of town use.

There was a choice of six-speed manual and seven-speed Powershift auto gearboxes; both work well, though there have been some issues concerning gear selection with the latter.

Steering and suspension

Having fine-tuned the EPAS, the Mk4's steering is wonderfully responsive and despite weighing more than its predecessor, it's still enormous fun to drive.

There's lots of confusion as to whether the Mk4 has an independent multi-link arrangement at the rear as on previous Focuses or a more basic twist beam arrangement. From what we can gather Ford tended to fit the twist beam axle on the less powerful, lower-specced Mk4s and it's only the Active, Vignale, ST, 2.0 diesel, the estates as well as some 1.5 diesel models that got the more sophisticated independent rear suspension setup. In truth, the only sure way to check is by looking underneath!

Which model?

▶ The entry-level Style had aircon, Bluetooth and a diminutive 4.2in colour screen but that was about it, so is probably best avoided. Our advice is to aim at Zetec spec and above to get alloys, cruise and the bigger 8in Apple CarPlay infotainment setup. The Titanium adds rear parking sensors, though most owners will have had them specified as an option anyway.

The ST-Line with its 17in alloys, bodykit and firmer suspension is the sporty offering and looks fabulous, while the ST-Line X goes a step further with its 18in wheels, privacy glass and part leather trim.

Engine-wise, for the best mix of reliability, performance and economy we'd opt for the 1.5-litre EcoBlue, preferably in 118bhp guise which is quite fast enough to be honest.

ECOBOOST
Ford
The fiery 1.0T EcoBoost is great but we prefer the 1.5 diesel.

Other component prices

AIR-CONDITIONING COMPRESSOR
Main dealer £669.60 plus £120 surcharge
Independent from £185.49

Running costs

▶ The 1.0 EcoBoost in its most mouse-like 98bhp guise will return mid-50s MPG but this is easily equalled by the much punchier 1.5 EcoBoost. The 2.3 ST, meanwhile, will do roughly 35mpg.

Insurance-wise, most Focuses start at group 12, though again the ST's premiums will be dearer as it sits in group 27. Annual VED is £195 across the board.

Brakes

There's really nothing to report on regarding brakes apart from occasional issues with the electronic parking brake. With age, the caliper can play up either by sticking on one side or not activating at all. If you notice uneven pad wear or if you get a whiff of burning on one side, then suspect the worst. Replacement calipers are plug 'n' play but you'll need to put the system into 'Service Mode' to swap it over.

What to pay

▶ The Focus has always been great value and because the earliest Mk4s are now nudging eight-years-old, there's lots of bargains out there.

There's usually a better choice of petrol engine cars than diesels in the classifieds. That said, the EcoBoost seems to fetch a slight premium, with the cheapest 1.0T likely to change hands at between **£4500-£5000**. The eye-catching red 2019 1.0T Zetec with 113,398 miles under its belt we spotted advertised privately in Hertfordshire for **£5790** looked like a sound buy. By comparison, its diesel-powered counterpart, a really well looked after 2019 1.5 EcoBlue Zetec with 123,000 miles advertised privately was up at **£4450** – over a grand less.

Desirable ST-Line cars command a £500-£1000 premium while the cheapest ST you'll find will be around **£10k**.

The Mk4 comes well appointed, though we recommend avoiding the lower spec cars. This one's the Titanium.

USEFUL CONTACTS

Bilstein www.bilstein.com

Euro Car Parts 020 8956 5000
www.eurocarparts.com

Focus City www.focuscity.co.uk
(breakers)

Other issues

Low battery output can cause several electrical gremlins (read spurious dash warning lights), so keep it charged and if you're not intending to use the car for long periods, hook up a trickle-charger.

Air-conditioning compressors can often fail, too, so check you're getting floods of chilled air in the cabin.

The hatch has ample luggage space – 443-litres with the rear seats up, to be precise.

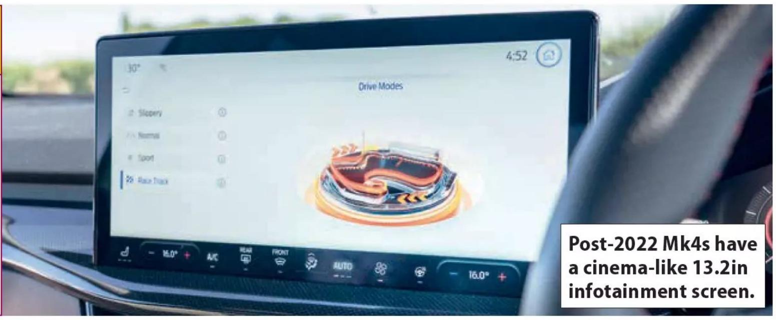
Boasting a 5cm longer wheelbase than its predecessor, there's a little more rear passenger legroom in the Mk4.

Verdict

▶ The Focus remains one of the best-handling family hatches you can buy, regardless of what suspension's out back. And for that reason, it outshines most of its more mundane family car rivals. Add to the mix a good range of engines, trim and body styles and there will be something in the range for everyone at very reasonable prices. And just look at the bargain basement parts prices!

Focus Mk4 2018-2025

Model	1.0T EcoBoost	1.5 EcoBlue	ST
Engine (cc)	999	1499	2300
Power (bhp)	98	118	276
0-60mph (secs)	11.7	9.9	5.5
Top speed (mph)	116	120	155
Average fuel (mpg)	50.4	51.4	34.9



Post-2022 Mk4s have a cinema-like 13.2in infotainment screen.

BILSTEIN

FOR MORE SAFETY AND RIDE COMFORT

BILSTEIN B3 coil springs: perfect OE replacement in uncompromising quality

Checking the springs also makes sense for modern vehicles, as high safety standards, such as crash-optimised bodies equipped with restraint systems, hybrid drives, larger brakes and wider tyres, increase the vehicle's weight and therefore put significantly more strain on the suspension springs.

In addition, steel springs are affected in winter: mechanical grit and stone chips can damage the surface, leading to corrosion. Road salt, which then comes into direct contact with the spring steel, further accelerates corrosion. For these reasons it is important that workshops check the coil springs regularly – for more safety and ride comfort. This check also offers a good opportunity for potential additional business.

A visual inspection of the springs from all sides for rust or hidden cracks is quickly done with the telescopic mirror. Why not take this opportunity to check if the water drainage holes of the spring plate are clogged with road dirt. The customer will appreciate this service, provided that the spring is still in working order.

In order to withstand these loads for as long as possible and offer good ride comfort, BILSTEIN relies exclusively on spring designs that are identical to those used in OE production:

- extremely high break resistance by using particularly high-quality chrome-vanadium or chrome-silicon steels
- optimum corrosion protection by high-quality and robust surface coating of the spring steel
- precise production: no loss of height after assembly

As the BILSTEIN B3 range includes all technical designs such as pigtail ends, central force designs and miniblock springs, it offers a very high degree of market coverage.

The assembly is a criterion that deserves special attention. Suspension springs need to be precisely fitted and correctly installed so that the customer receives an optimal suspension. This is why BILSTEIN supplies detailed vehicle-specific installation instructions showing the installation step by step.

Workshops benefit from BILSTEIN's complete series replacement portfolio: shock absorbers and coil springs in OE quality.

The BILSTEIN B3 range includes all typical coil spring designs, such as the miniblock spring shown here.

The BILSTEIN B3 coil springs correspond exactly to original equipment in terms of technology and quality.

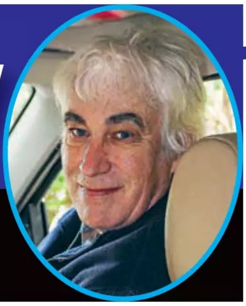
TIP: even if only the spring on one side of the vehicle is affected by damage, the springs (and shock absorbers) always have to be replaced on both sides of the axle. Otherwise, safe handling is not ensured.

The result? Correctly mounted BILSTEIN B3 coil springs ensure smooth and safe handling and offer a level of comfort and performance as if the vehicle had just come off the line.

Further information can be found here:

workshop.bilstein.com/en/engineered-for-excellence/

Dealer's Diary



Peter Simpson provides us with an insight into the automotive sales trading world – and beyond.

Chips on the roof

Here's an interesting one for you. Customer buys a four-year-old Mazda3 from a dealer. 20 days later, he gets in touch to say that he has noticed "rust on the roof of the car" and that a local car body shop has told him that the "chips are developing rust underneath" and elimination of these will mean respraying the entire roof.

He went on: "Considering this was a pre-existing issue I was not made aware of during purchase I would appreciate your help as I believe this would fall under the warranty." He then went on to say, "I am aware that I can reject the car under the Consumer's Rights Act 2015 due to this issue as the car technically is not as described and free from fault, however I would rather avoid that since it would be an inconvenience for both parties."

The sale was not a distance transaction, and the car was bought following a customer inspection. The body shop quote was £480.

I'm sure that most people's reaction to something like this would be a polite but firm no; stonechips on a four-year-old car (which, incidentally, had covered 52,000 miles) is surely normal wear and tear? The customer, however, was having none of it; he insisted that they rendered the car unfit and indicated that "Trading Standards" or "legal action" would be their next port of call if the dealer didn't do something.

So, what do you do next? You could of course just bite the bullet and do it. You don't, though, have to accept someone else's quote – you can insist on doing the job yourself. That, though, can cause problems if, as is pretty-much inevitable if a customer is this picky, they find fault with the repair. You can offer, as a goodwill gesture, to split the cost 50/50, though be aware that there have been recent court cases where an offer of this kind, even if made explicitly as a goodwill gesture, has been determined to be an admission of liability.

And if you give way on something like this, you might be opening yourself up to many more equally trivial claims in due course; "a customer who moves in with you" as they are known in the trade.

Or you could simply stand your ground. A firm but polite no does work quite often in cases where a customer is in the wrong, not least because if they are wrong and look to take it further they'll be told exactly that. You may, though, find yourself dealing with a fair amount of stress. To be fair, these days Trading Standards departments are pretty good at weeding out no-merit cases, though your customer will only give them their side of the story, and they might decide that the best way of getting to the bottom of things is to pop out and see you face-to-face.

Whatever else happens, you are entitled to see and assess a fault for yourself – unless, of course, the fault is one that renders the car unroadworthy or it's a mechanical issue which prevents the car from being driven at all or without making a problem worse. You are certainly within your rights to ask to see a supposed cosmetic or corrosion-related issue. If it is a trivial matter or a try on, the customer may decide that it's not worth their trouble.

When I was trading, I always included on the receipt – which the customer signed before taking the car – that they had been given full opportunity to inspect and test drive the car and were satisfied with its apparent condition at the time of sale." This was never tested in court but I felt it was a good way of protecting the customer and myself.

IGA trade insurance

RMI
INSURANCE SERVICES
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Starts Here

Good news for members and potential members of the Independent Garage Association (IGA – part of the Retail Motor Industry Federation); they have launched their own in-house motor trade insurance brokerage service.

RMI Insurance Services is wholly-owned by the RMIF and as you'd expect they are motor trade insurance specialists. They are not providing insurance cover or policies themselves, but as specialised brokers owned by a leading trade body they probably know this market-sector better than most high street brokers. Besides road-risks policies they are also offering premises and liability cover, along with a free assessment of a business's needs and how well these are being met by current arrangements.

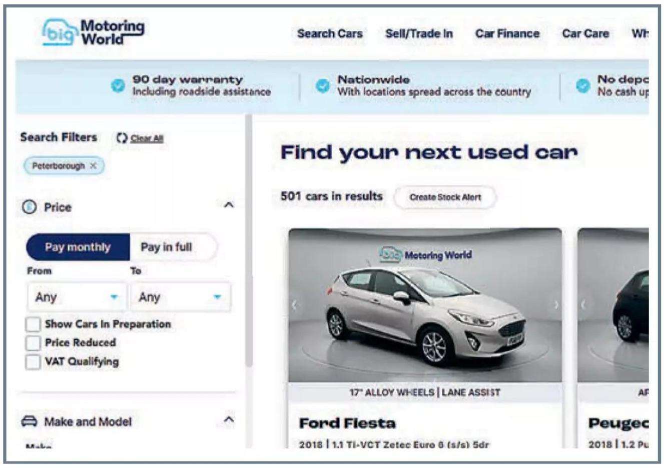
Other motor trade brokerages do of course exist, and many forms also deal with customers directly, but this is an area that does really need specialist knowledge, and if the RMIF can't provide that then who can? To find out more, go to **https://rmiinsuranceservices.co.uk/**

BIG losses

More bad news for Big Motoring World – despite significant expansion during 2024, newly-released figures show that the business lost £10.7million in 2024, compared to a profit of £1.1million the year before.

The company blamed increased financing and 'exceptional' costs caused by its 'expansion' and 'restructuring' for the losses, along with lost revenue after GAP Insurance sales were disrupted by the FCA's investigation. There is still, of course, the ongoing legal battle with ousted founder of the business Peter Waddell. The accounts show that Waddell's company show Peter Waddell Holdco Limited is owed £6.6m by the company. Waddell's case for reinstatement is due to go to court in the near future.

Blaming 'expansion' for the losses. Big Motoring World's new CEO Laurence Vaughan said that the focus in 2024 was on "transformation." Ninth and tenth retail sites were opened in Sheffield and Norwich, sites in Cannock and Leeds were bought from Available Car at a cost of £30 million. Consolidation of two sites at Peterborough into one accounted for £726,882 in closure and other costs, and there was also investment in IT and the "senior management team" – the figures also showed the highest-paid director received £531,000. As usual with published accounts, the figures do not name the director who was paid most.



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2018 | 1.1 Ti-VCT Zetec Euro 6 (s/s) 5dr

Peugec
2018 | 1.2 Pu

These and other changes led to revenue increasing from £697.4million in 2023 to £859.1million in 2024. During 2024, Big claims to have sold 51,000 cars across the network, and to employ 1500 staff.

In conclusion, Vaughan said. "We can be proud that we now have the right foundations in place to build sustainable growth, and will look forward with positivity as we build on our momentum in the UK's vital used car market."

Time will tell whether or not that optimism is justified.

Sleep on it

ESCORT
RS2000
Ford Rallye Sport

Would you believe a would-be buyer who pulled out of a purchase due to 'remembering' they had already got a car that they wasn't using?

I've often thought that someone in academia really ought to do an in-depth analysis of the strange correlation between people agreeing to buy a car and then, before they pay for it or collect it, having some strange misfortune befall them; such as loss or employment, sudden admission into hospital, death of a relative, falling off a ladder, death of a loved pet, etc., etc.

Of course, such things are rarely true. In 99% of cases, the would-be buyer has simply changed their mind. It doesn't make any difference though; if someone is trying to back out of a deal before they've even got the car, the likelihood of them completing is virtually nil, whatever you do. And even if they do go ahead, you'll have nothing but trouble going forwards. It's simpler and easier all round just to accept it and then move on. I'd usually return a deposit as well, though whether or not you have to do that will depend on the basis on which said deposit was taken.

Sometimes, after a viewing, you get a sixth sense that someone is saying yes when they really mean no. In these circumstances, though it may be counter-intuitive to someone whose business is selling, it's often best all round, rather than closing the deal then, to suggest that they "sleep on it, so you are sure this is the right car for you." More likely than not you won't hear again, but that's no actual loss as they wouldn't have bought it anyway, and this way you're not messing around unwinding a deal and can keep the car on the market for someone else to buy.

Anyway, here are a few 'excuses' I've heard of recently and whether or not they were true.

Guy comes and buys a new car on finance. The next day his parents came in to cancel the deal as had been on day release from mental hospital. TRUE – he'd bought two other cars the day before.

Can't take delivery cos his left leg had to be amputated due to cancer. FALSE – called later that week and his wife answered the phone as he was "out playing squash."

Wife called to say her husband had a heart attack and died over the weekend. FALSE – two weeks later he was seen queuing up in the chippy.

Mum called to say son couldn't go ahead because he had "unexpectedly" been sent to prison. TRUE – he was expecting a suspended sentence for assault but got sent down instead.

"Wife said no". "But she was with you, and all over it." "That wasn't the wife, that was the mistress." TRUE!

And finally… "I've found a car in my garage which I had forgotten about buying, so I'm going to use that instead." UNKNOWN, though the chap in question lived in a terraced house in a big city…

Service Bay

2014 VW GOLF 1.6 TDI ESTATE

TDI scheduled maintanance

With over 200k on the clock, we help to service an eleven-year-old Mk7 Golf turbodiesel. **Rob Hawkins** reports.

THANKS TO

Ken Jenkins independent classic Jaguar specialist
01909 733209
www.ukjag.co.uk

Overall difficulty rating

●●●○○

We're always interested in servicing high-mileage vehicles at *Car Mechanics*, so when we discovered the apprentice at independent classic Jaguar specialist Ken Jenkins (near Worksop) had recently bought a Mk7 Golf with over 200k on the clock, we volunteered to help with its next service.

There are a couple of niggling complications with this era of the Golf. One of them concerns replacing the fuel filter (see Rob says). The other concerns the electronic park brake, which means the rear brakes cannot be worked on unless diagnostic equipment is connected to the vehicle to switch them to Service or Engineering mode.

Other than these two points, most servicing jobs on this Golf are straightforward to conduct. The cabin filter is a little finger crunching, especially when it comes to releasing the glovebox, but it's not too difficult, although judging by the state of the old cabin filter on our Golf, it hadn't been changed in a long time. Unlike the air filter, which was reasonably clean, despite the recommended service interval being every 60,000 miles or six years.

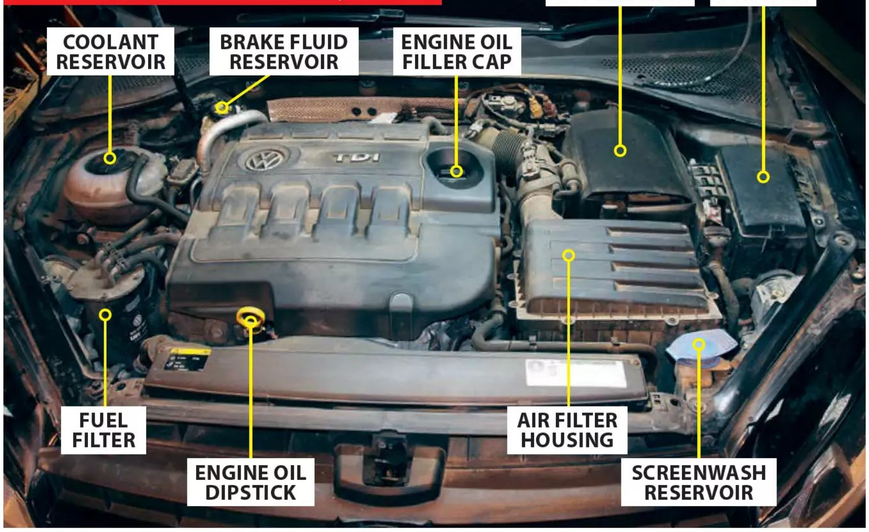
Rob says

The recommended service interval for the fuel filter on this 1.6 TDI engine is every 60,000 miles. After changing it, diagnostic equipment must be connected to the vehicle's OBDII port to bleed the fuel system. If this isn't done, there's the risk of momentarily starving the fuel pump of fuel, which can result in excessive wear of a small roller inside the fuel pump along with the body of the pump around it. The swarf generated from this blocks the fuel system and the engine won't start. Cranking the engine more and more will only add to the problem.

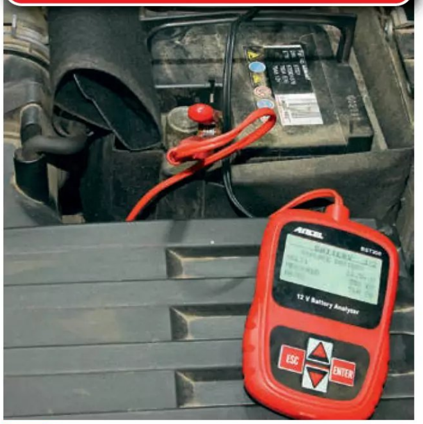
EQUIPMENT REQUIRED

- jack
- axle stands (or ramp)
- oil drain bowl
- 13-32mm sockets/spanners
- Torx bits: T25/45
- screwdrivers
- pry bar
- battery tester or multimeter
- spray grease
- tyre pump/gauge
- torch
- torque wrench
- clean measuring jug
- brake pad thickness gauge
- Vernier calipers or digital Verniers
- antifreeze hydrometer
- pick

Underbonnet layout

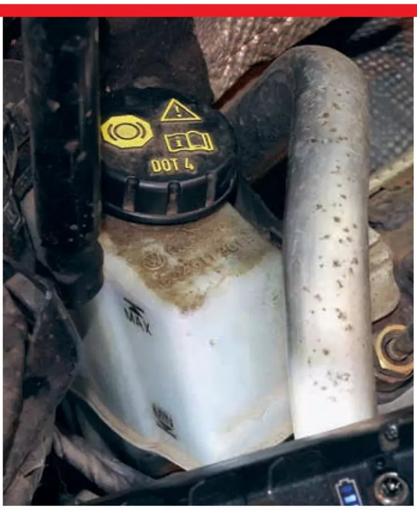


ENGINE BAY CHECKS



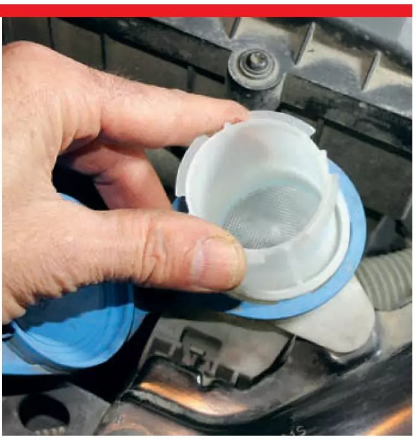
1 TEST BATTERY

The battery is located in the nearside of the engine bay. Check its voltage with a multimeter or check it using a battery tester. Our photo shows an Autel battery tester checking the cold cranking amps (CCA) of the battery and concluding it's insufficient.



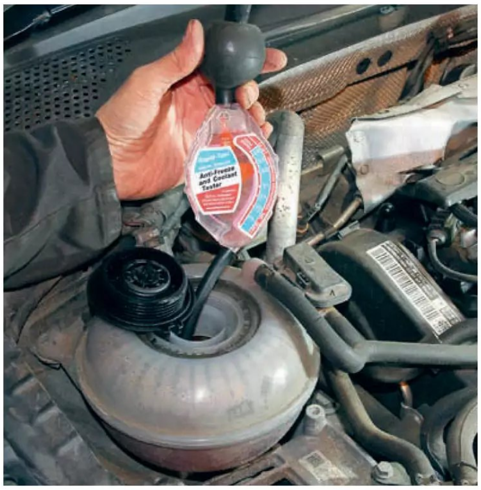
2 CHECK BRAKE FLUID

The brake fluid reservoir is in the offside rear corner of the engine bay. Shine a torch on the side of this translucent reservoir to check the level against the minimum and maximum markers on the side.



3 TOP UP SCREENWASH

Release the blue-coloured lid for the screenwash reservoir in the nearside front corner of the engine bay. Extract the filter in the top of the filler neck and rinse it out under a tap. Refit the filter and pour screenwash in until it's full. Operate the rear screen wipers and the windscreen wipers and washers to check the spray pattern.

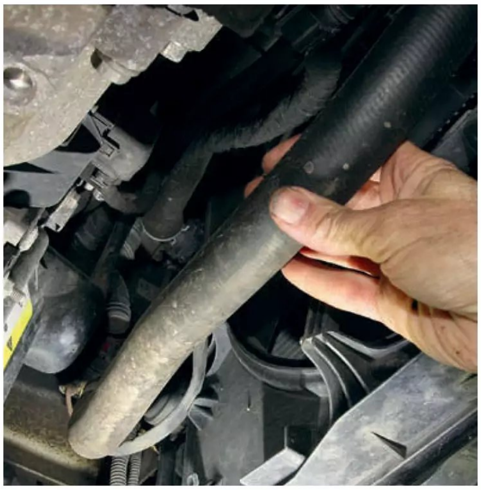


4 TEST COOLANT

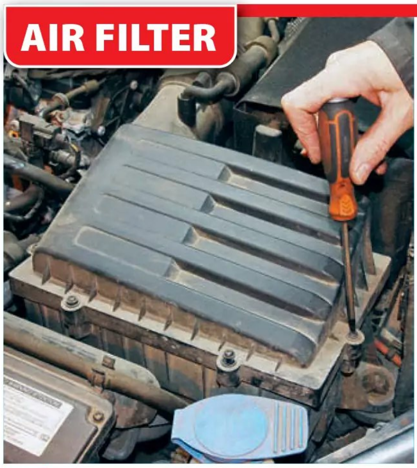
◀ When the engine is cold, release the pressure cap for the coolant expansion tank in the offside of the engine bay. Use an antifreeze hydrometer to check the freezing and cooling capacity of the engine coolant. Pink-coloured G13 coolant should be used if it needs topping up.

5 SQUEEZE HOSES

▶ There's not much room inside the engine bay to pinch any coolant hoses to check them. However, once the engine undertray has been removed (see Step 15), the coolant hose routed to the bottom of the radiator can be checked to look for perishing, cracks and leaking coolant.

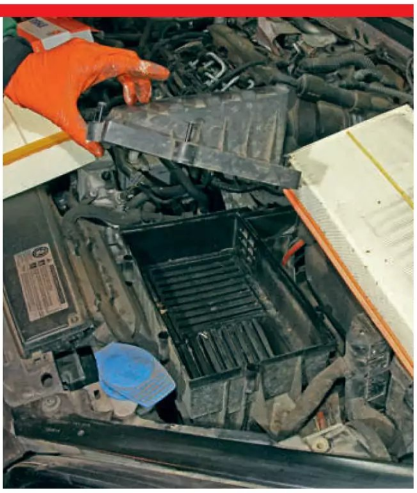


AIR FILTER



6 REMOVE LID

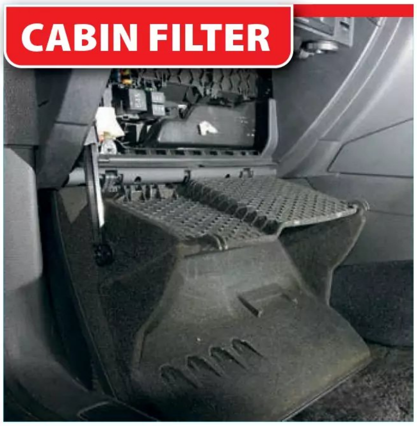
The air filter is contained inside a plastic housing in the nearside of the engine bay. Undo eight Torx T25 screws that secure the lid of the housing. These screws cannot be removed – they remain attached to the lid, even if they have been fully undone.



7 CHANGE AIR FILTER

Lift the lid of the air filter housing and extract the old air filter. Clean inside the housing, then fit a new air filter, making sure its rubber edges are seated inside the housing. Refit the lid of the housing.

CABIN FILTER

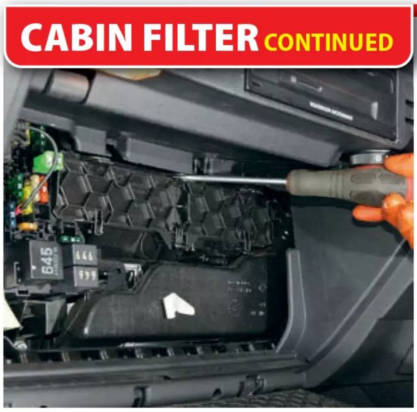


8 DROP GLOVEBOX

Open the glovebox until it can go no further – it's restricted by a couple of stops at the top edges. Look for a couple of cut-outs above the top edge of the glovebox (near the corners). Push each cut-out whilst carefully opening the glovebox further to force it past these stops. Once released, the glovebox can be opened as far as it's shown here.

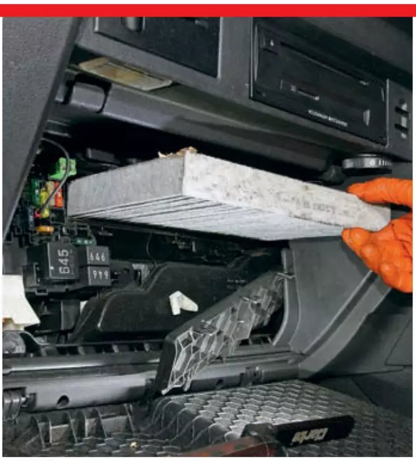
⇨

CABIN FILTER CONTINUED



9 RELEASE COVER

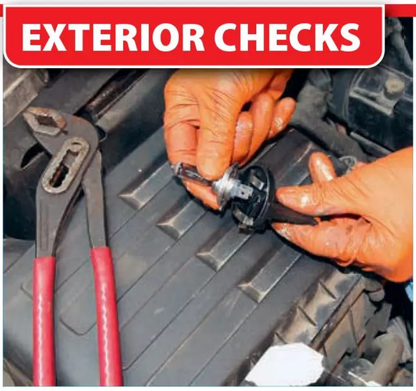
Look for an oblong-shaped plastic access panel (cover) behind where the glovebox was fitted. Use a flat-blade screwdriver to release three tabs across the top of this cover, then carefully remove it. Avoid breaking any of these plastic tabs, so be patient because the cover isn't easy to remove.



10 CHANGE CABIN FILTER

With the access panel removed, extract the old cabin filter, clean inside the housing, then fit a new filter, making sure any airflow arrows are pointing down. Refit the access panel and the glovebox.

EXTERIOR CHECKS



11 CHECK HEADLIGHTS

Check all the exterior lighting (headlights, indicators, fog-lights). If a bulb inside a headlight unit has failed, they can be replaced in situ, but space is tight. Some bulbs, such as the headlight bulb shown here, are contained in a holder that can be extracted by turning it anti-clockwise. We used angled water pump pliers to release it.

12 REAR BULBS

We had an issue with a rear fog-light bulb, which is housed inside the tailgate and accessed via a small plastic panel. Removing the entire bulb holder helped, but we also realised the tailgate had to be closed for this part of the lighting to work.

13 TIGHTEN WHEEL BOLTS

Slacken each wheel bolt in turn and tighten it again using a torque wrench to 120Nm. The wheel bolts can become corroded on to the alloy wheels, resulting in them becoming seized and difficult to undo. However, it is not advised to lubricate them.

DIESEL
GAZOLE

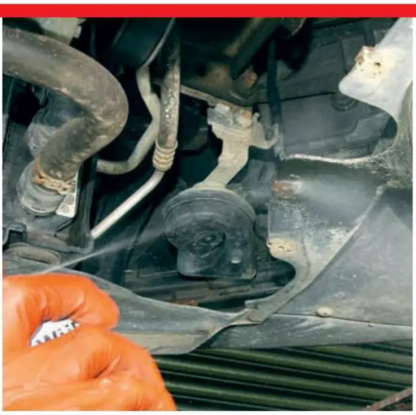
14 CHECK FUEL FILLER CAP

Open the flap to access the fuel filler cap (offside rear of the vehicle). Unscrew the fuel filler cap and check the condition of its seal, looking for damage and perishing. If it's damaged, diesel fumes may leak out of the filler cap.

OIL & FILTER

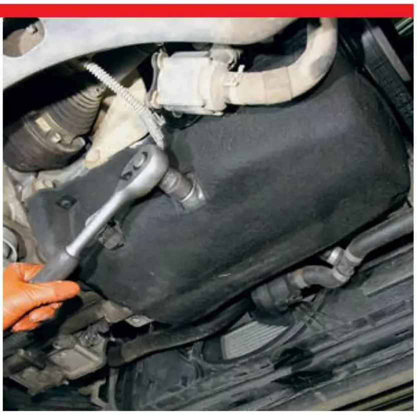
15 REMOVE UNDERTRAY

Run the engine for several minutes or drive it for a couple of miles to help warm the engine oil and make it easier to drain. From underneath the vehicle, remove the plastic undertray, which is secured with three Torx T45 screws and eight T25s.



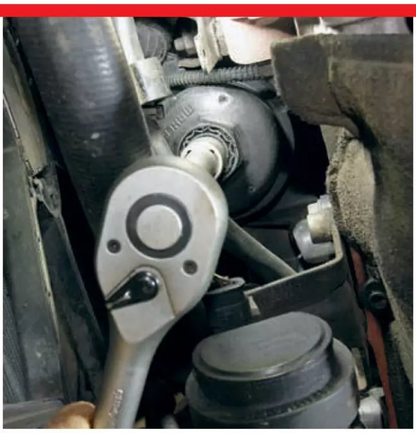
16 LUBE SPIRE CLIPS

The Torx screws undone in the last step will probably be corroded, so spray a light grease over them and the spire clips they are threaded into. This will help to make it easier to undo them in the future. If the heads of any of these screws are chewed, replace them.



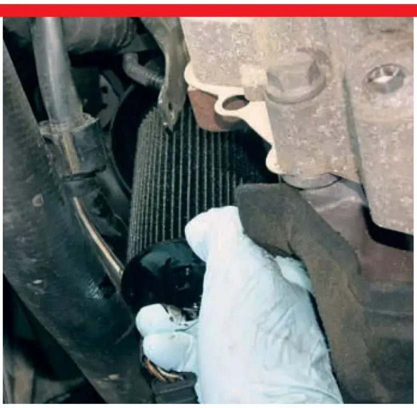
17 DRAIN OIL

With a suitable container underneath the sump, undo the 19mm drain plug and leave the oil to drain for several minutes. There should be roughly 4.6 litres of oil to collect. Whilst the oil is draining, continue to the next steps to remove the oil filter.



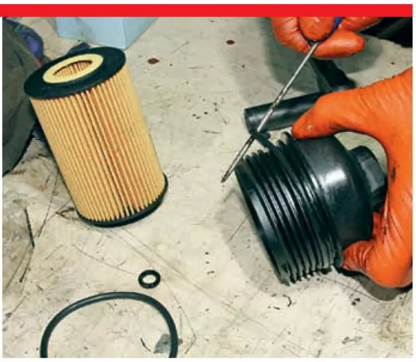
18 DRAIN OIL FILTER

Before removing the old oil filter, drain the oil inside it. The oil filter is accessed from underneath the engine (in front of the sump). Using a 13mm socket, undo the drain plug in the centre of the filter. Oil will drain from it, so collect it in a suitable container.



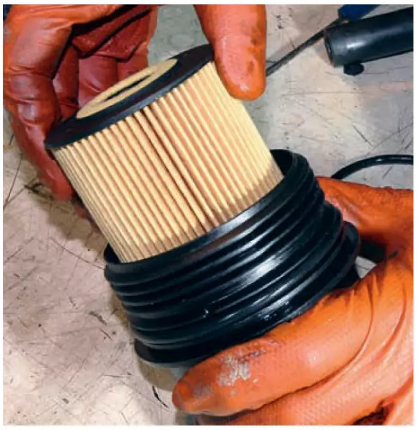
19 UNDO OIL FILTER HOUSING

Once the oil has drained from the filter, use a 32mm socket with extension bars to undo the oil filter housing. Some oil may drip down when undoing it. Remove the housing, but don't be surprised if there's no oil filter inside it. The filter may have remained on the engine, so retrieve it.



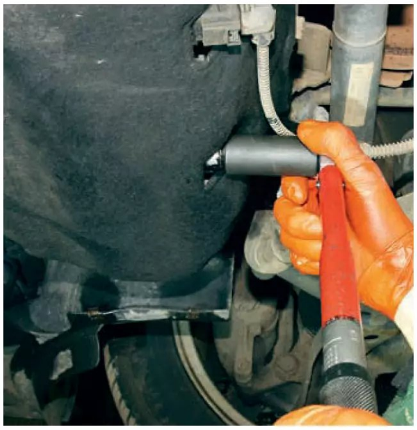
20 CHANGE O-RINGS

There's a rubber O-ring fitted around the thread of the drain plug removed in Step 18 and also around the housing that was removed in the last step. Use a pick or thin screwdriver to remove each old O-ring and help fit the new ones (usually supplied with a new oil filter). Add a smear of fresh oil around each O-ring. Refit the drain plug into the housing, tightening it to 5Nm.



21 REFIT OIL FILTER HOUSING

Fit a new oil filter into the housing, making sure it clicks into position (it will only fit one way round). Fit this assembly back on to the engine, tightening it by hand, then using a torque wrench to tighten it to 25Nm.



22 REPLACE DRAIN PLUG

Fit a new drain plug, or if you intend to reuse the old one, refit it with a new copper washer. Tighten the drain plug to 35Nm. With the oil filter housing and drain plug fitted, it's now time to refill the engine oil.

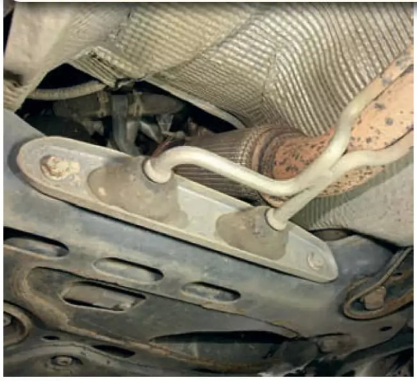
23 REFILL ENGINE OIL

Measure 4.6 litres of 5W-30 (VW 507.00) fully-synthetic engine oil and pour almost all of this into the engine. After a few minutes, check the level on the dipstick, which should be around the three-quarters mark. Top up the oil if necessary.

24 RUN ENGINE

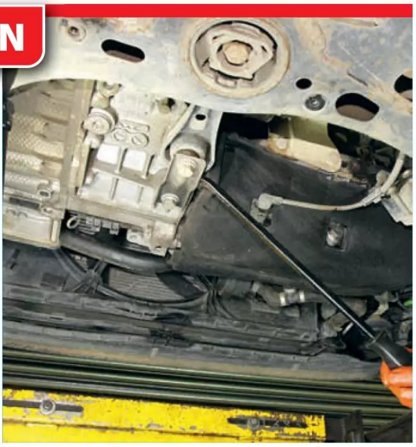
Start the engine and make sure any oil pressure or low level warning lights don't remain displayed. Switch off and look around the underside of the engine for leaks from the filter and drain plug. Recheck the oil level on the dipstick, topping up to ensure it's around the halfway to three-quarters mark.

UNDERSIDE INSPECTION



25 CHECK EXHAUST

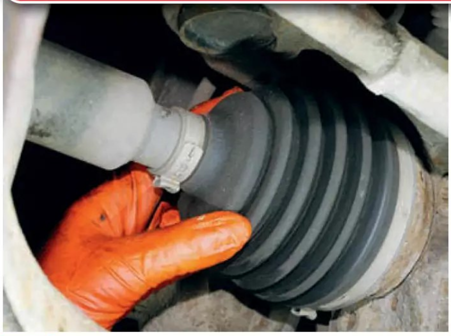
Look underneath the vehicle to inspect the condition of the exhaust mounts and any rubber hangers (look for perishing of the rubber). The central mount shown here can corrode, so check its condition.

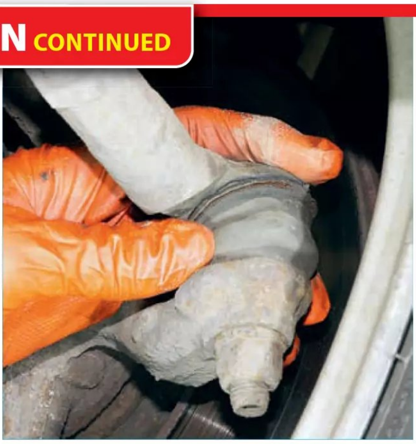


26 LEVER GEARBOX MOUNTS

Use a pry bar to check the condition of the lower gearbox mount and also the mounting points for the front lower suspension arms. Check the condition of the lower suspension arms, looking for excessive corrosion.

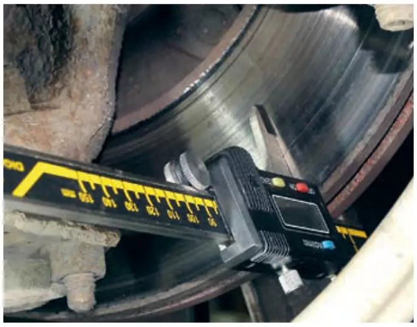
UNDERSIDE INSPECTION CONTINUED





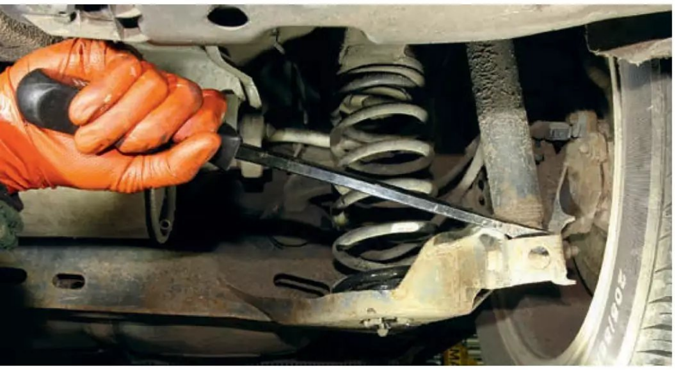
27 PINCH BOOTS

Behind the front road wheels, squeeze the corrugated rubber gaiters on the ends of the driveshafts and pinch the rubber dust covers on the ends of the steering track rod ends. Any splits in these rubber components may allow grease to escape and water and dirt to get in, resulting in premature wear.



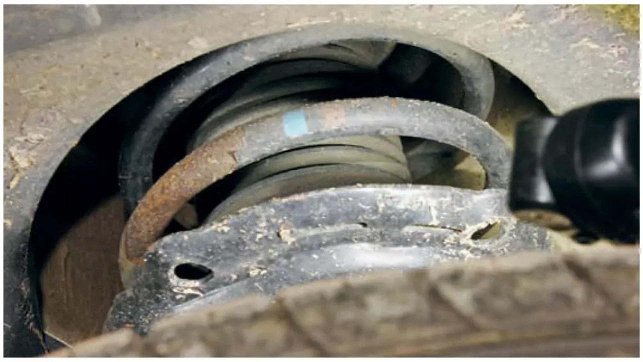
28 INSPECT BRAKE DISCS & PADS

The disc guards restrict access to the brake discs (one of ours was missing), so it's difficult to measure the thickness of a brake disc. The thickness of the brake pads can be measured with a brake pad thickness gauge. If you are in any doubt over the brakes, remove the road wheels – note the rear brakes have an electronic handbrake.



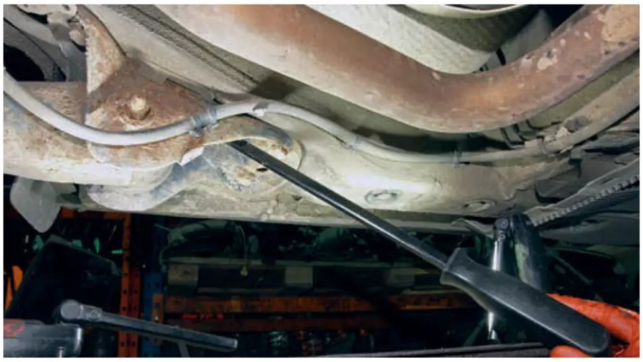
29 CHECK SPRINGS & DAMPERS

Visually inspect the condition of the rear coil springs, looking for corrosion and fractures. Look around the body of the telescopic dampers for leaks (misting) and lever a pry bar against each one's lower mounting bush to check for excessive movement.



30 INSPECT FRONT COIL SPRINGS

The front coil springs can be visually inspected over the tops of the tyres, which is easier if the front of the vehicle has been raised. Look for corrosion and fractured coils.



31 CHECK REAR BEAM MOUNTS

There are two large mounting bushes for the rear beam, which can be visually inspected for perishing of the rubber sections, but can also be checked with a pry bar for excessive movement.

SERVICE SCHEDULE

RECOMMENDED SERVICE SCHEDULE

EVERY 10,000 MILES or 12 MONTHS

- Change engine oil & oil filter
- Check coolant level & test concentration
- Check tyre condition, pressure & tread
- Top up screenwash fluid
- Check battery
- Check wiper blades & washer jets
- Check all underbonnet components & hoses for fluid leaks
- Inspect brakes
- Check steering & suspension components
- Check auxiliary drive belt
- Inspect exhaust system & mountings
- Check operation of all electrical systems
- Lubricate all locks & hinges
- Check brake fluid for moisture content

EVERY 24 MONTHS

- Replace brake fluid

EVERY 40,000 MILES or 24 MONTHS

- Change cabin filter

EVERY 60,000 miles

- Replace fuel filter

EVERY 60,000 MILES or 72 MONTHS

- Replace air filter

Every 140,000 miles

- Replace timing belt and tensioner

Don't forget to also

- **CHECK TYRE** tread depth and inspect the sidewalls for perishing and damage.
- **LUBE LOCKS** and hinges

- **CHECK BOOT** for water ingress.
- **CHECK WIPERS** for splits in the rubber.

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GENERAL

Gearbox lifting

Q I've just been reading the April 2025 edition of *CM* and the story about using a transmission jack to lift the gearbox back into a vehicle.

It's ideal for use with a ramp, but most of us are too old to use a ramp at work, like we used to. I know you can get a jig that cradles gearboxes that bolts to the saddle on a jack. This eliminates the use of the jack if you need the job doing. My idea is to have a "basket" on top of an airbag (lorry suspension units look suitable), and a compressor to drive it.

Most people use drive on ramps or axle stands, so I think you could have a shortarse version of the real one used with a garage ramp. What do you think?

Andrew Millichamp

A On my own I find that laying under the motor trying to remove a gearbox is harder the older I get and the thought of not doing such jobs without the assistance of a ramp now would be quite a challenge.

A large airbag type cradle to support and then lower and again lift the transmission from a vehicle, does in theory sound to be quite plausible.

I would wonder at the logistics of such an apparatus, and this may need to be controlled by a second assistant whilst the transmission was kept in balance under the vehicle.

The other thought that occurs is that such an airbag would need to have quite a range of lift and I do not believe that the lorry suspension units would have this scope. The second step of the operation would then require the transmission sliding out from under the vehicle and again this may be a challenge if balanced on top of the airbag.

There are airbags that are used in recovery situations that do have the capability to lift a vehicle and one of these may suit the task. It would be interesting to hear from our readers any methods used by them to support a large transmission when working at ground level.

GENERAL

Aerial choice

Q I wonder if the modern radio aerial, i.e. shark style, are an improvement on the traditional wand aerial in terms of quality of reception?

Geoff Allen

A To explain the difference, it is first worth explaining why we no longer see the electric aerials or the large whip aerials on vehicles now. The reason is basically that these were prone to being damaged and the short wand aerial or the shark fin, are more robust.

For an aerial to operate correctly with the FM signal, its length needs to match that of the radio waves it is picking up, so with an FM signal of 100 MHz, the radio wave will be around ten feet.

As this is an unpractical length, the standard aerial for years was around a quarter of this to enable a good signal to be picked up. It was then discovered that the long whip or solid type aerial could be replaced with a shorter stubby aerial, as long as the copper windings in the aerial matched the length of the radio waves.

Then came the digital radio and another aerial was needed. This, it was found, could be combined in one simple shark fin type casing which allowed both the new digital signal and the old FM signal to be picked up.

The convenience and the stability of the shark fin aerial which is robust and will withstand the automatic car wash far better than even the short whip aerial made it the perfect choice.

This is why you will see most new vehicles now have the shark fin aerial as a standard fitment.

Is the reception any different to the short whip aerial? I suspect there is not much in it, but due to the internal coil windings, both the short whip aerial and the shark fin will be give a better reception than the old wand type, plus the shark fin aerial can also incorporate the digital reception.

FORD C-MAX

Reversing sensor feed

Q I'm trying to fit aftermarket reversing sensors on a 2014 Ford C-MAX, but I'm struggling to identify the reversing light wiring. Research so far suggests the wire is Green with an Orange tracer, but there are several of these wires behind the boot trim on the nearside coming from/to a largish black box; I've probed one of these wires with a test light and am not seeing anything when the reversing lights are on.

Could you advise any further on which wire I need to tap to get the reversing signal for the sensors please?

If you need any more details, eg. a picture of the wiring/black box, please let me know.

Tim Collins

A The box in the luggage area that you have found is the central locking control module.

The wire colour to the reverse lamp should be a Green with a Brown tracer. There are two wires of this colour and the only way to determine which of the two wires is needed is to test them using a light or meter. This can be done by using a pin to pierce the insulation of the wire and then with either a test light or a meter connected to the pin and a suitable earth, the ignition should be turned on (engine off) and the vehicle placed into reverse.

The reverse lights should then come on, and the wires can be tested to see which one is the feed. This can then be used to power the sensor control.

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FORD MONDEO

General questions

Q Would you please be able to help with a few general questions about my current car, which is a 2018 Mondeo 1.5 EcoBoost petrol automatic, current mileage is about 38,500.

As the Mondeo is due a major service. I believe that includes all filters, brake fluid, etc, but I can't find exact details. I used to be able to print a schedule from Ford Etis but that isn't available now. Can you find me a full schedule anywhere please?

Secondly, I don't know much about the transmission. It's the conventional automatic of course, not PowerShift, but do you know the model number? Is it a Ford-made item? Also, although I don't think there is a fluid change in the service schedule would you recommend a change? Would it be a straightforward job?

Incidentally, after driving both the PowerShift and conventional automatics, the first was a better drive with quicker changes but not so good in heavy traffic. It would get caught and jerk between "creep" and full 1st gear if you got stuck in a slow-moving queue. The conventional isn't so much of a "driver's car" but better round town. Many thanks!

Andrew Smedley

A I do have access to a service schedule on Autodata and can inform you that the 6-year service has a book time of 1.9 hours and the following items should be replaced: Engine oil and filter, cabin filter, air filter and spark plugs. The engine coolant, screenwash and brake fluid should be checked and topped-up if required and the A/C system should be deodorised.

The gearbox fitted to your Mondeo should be the Ford 6F35 (Ford-GM transmission). At the mileage you have covered I would be happy to leave the fluid for possibly a little longer but changing it may be a positive step. The fluid is Ford WSS-M2C938-A and the system takes 4 litres when draining and refilling. The method of replacing the oil is as follows:

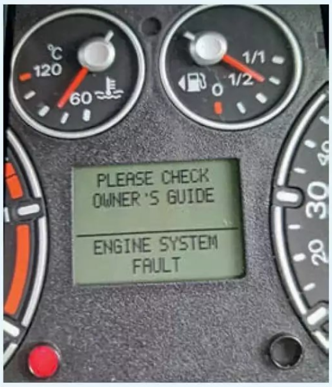
- **After draining down the oil, fill with the specified amount (4 litres) via the breather at the top of the transmission, and then start the engine and ensure the handbrake is firmly applied, the footbrake is held down, then select each gear for five seconds returning the selector to 'P'. Diagnostic equipment should then be used to ensure the ATF temperature is at 85-93°C.**
- **Remove the level plug (near driveshaft on transmission) and allow excess fluid to drain off, if no fluid drains then add fluid at 0.25 litre increments until the fluid runs from the level plug.**
- **Fit new level plug.**

FORD FIESTA

Warning message

Q My brother's 2008 Ford Fiesta 1.4 TDCi has a message come up on the dash (please see attached picture). The engine is running, and all seems to be OK, with no lights showing on the dash. What should he do?

Jayne Newbury



A The message in the information panel "engine system fault" is indicating that the engine system has malfunctioned. From the photo I can see that this is accompanied by the small red light to the lower left of the display panel.

The official instructions when this occurs is to stop the vehicle as soon as it is safe to do so. Switch the ignition off and have this checked before continuing your journey.

The first checks would be to ensure that the engine oil level and coolant levels are correct. The brake lights should also be checked as a failed brake light switch can trigger this message on this vehicle.

If the levels are correct even though an engine management light is not showing on the dash, there should be a code in the system and so it would indicate the reason for the warning alert on the dashboard.

Once the code is retrieved the source of the problem should be known.

FORD FIESTA

Central locking

Q My 2020 Ford Fiesta Titanium X 1.0 has a central locking issue with the NSF door which will not open when locked using the handle, lock or using the finger pad on the door handle! It will lock and unlock using the remote though and from the driver's side handle, so suggesting there are no issues with the mechanical side.

Initially the driver's door only would unlock but I fixed this by holding down the lock/unlock button on the remote until the flashers flashed so from the driver's side now all the doors lock and unlock with no issues.

I believe there is an electrical connector on the door handle, so is there a receiver/sensor inside the door that could possibly be faulty, though I haven't seen these advertised so perhaps this isn't the cause of my fault? I also looked under the passenger seat for a module but there is only a connector block there.

I have also carried out an OBD check using my Autel MaxiSys MS906TS and no error codes where present.

Are there modules for the central locking under the centre console and could one of these be faulty?

Any information on how this system works and any checks to confirm where the fault lies would be very much welcomed.

Thanks for a great magazine which I have been reading since I was 16 years old.

Tom Harrington

A As the central locking does activate using the remote key, this does appear to be an electrical communication problem which I suspect is within the door. This will be either the communication between the lock button by the release handle or the door function control module, that is located within the door.

The system uses the module in the door to determine the operation of the locking and unlocking, communicating with the external sensor in the interior switch.

It was the case on the earlier models that damp could enter the exterior handle and cause a fault to develop with the external sensor, it may be the situation that either this sensor or the interior switch is faulty.

It would need Ford dedicated diagnostic equipment to confirm the operation of either circuit but removing the door card and checking the connection to the door control module may reveal a poor circuit which can then be rectified.

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RANGE ROVER SPORT

Oil level

Q I have just purchased a 2018 Range Rover Sport 3.0 SDV6. It has covered 62,800 miles and runs really well. The vendor changed the oil and filter, and I have noticed that the indicator is saying "overfilled!" There is no manual dipstick. Is it necessary to correct this and what is the best way to do so? Do I need to drain and refill?

Also, it is fitted with two turbochargers. Do these work in parallel or are they different sizes and work sequentially?
John Wren

A The oil capacity on your Range Rover is 5.9 litres and it is important that the oil level is not overfilled. Like many diesel engines the oil level can rise during a DPF regeneration or a failed DPF regeneration, and if the oil level is too high this can cause a number of unwanted conditions.

As the oil has only just been changed I would think it is acceptable to attempt to simply drain down a small quantity of oil and then check the level via the dash controls. The level is checked as follows:

- **Run engine for 10 minutes then switch the ignition off and allow the oil level to stabilise for ten minutes.**
- **Put the selector lever in 'P' and open the bonnet, then switch the ignition on. Press the OK button in the centre of the left control on the steering wheel. This will bring up the menu then press the button to the left to select service menu.**
- **When the service menu is showing press the OK button, then press the button on the left again to select oil level display. Press the OK button.**
- **Then press the cruise control cancel button on the right-hand side of the steering wheel twice within 2 seconds to access the live oil level display.**
- **The level can now be read off and if you need to top up or still further lower the level, the above process will need to be repeated.**

You will at this stage I suspect, as I often do, wonder why the inclusion of a simple dipstick would have been so difficult.

The SDV6 engine is a twin parallel turbo engine, which uses a turbo on each bank to supply the thrust.

LAND ROVER FREELANDER

Traction control

Q I am having a problem with the traction control and hill descent light coming on my 2001 Land Rover Freelander TD4. The problem started with the two lights coming on intermittently and staying on for a few seconds. They then went out. I am assuming this is an ABS problem, although the ABS light was not coming on. I have had this in the past and found it to be one of the wheel sensors or reluctor ring on the driveshaft CV joint.

I thought I would leave this to develop and see what happened, but I am now finding that I get a pulsing on the brake pedal when I brake, even just lightly. The lights sometimes come on with braking but not always.

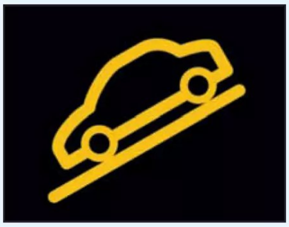
I fitted a new ABS sensor some time ago on the passenger side front and I thought that it might be related to that, so I tweaked the sensor back a bit from the reluctor ring. The result of this was much worse. I pulled the sensor out and checked it was clean and there was no damage on the reluctor ring.

I reset the sensor with a gap of about 1mm and the ABS light worked as it should, but the traction control light and hill descent light still come on intermittently and the pulsing on the brake pedal still remains. Sometimes it brakes as normal and there is no pulsing. I find that if I brake and then lightly release the pedal and then re-brake again it works as normal.

I do not have a diagnostic tool that reads ABS, and I don't know if this would help. I have had the three lights coming on together in the past and found it to be one of the ABS sensors which I eliminated by connecting my DVM across the connections of the sensor and turning the wheel to see if it pulsed.

I read on some of the YouTube information and videos that this could be the brake switch behind the brake pedal – and I changed this switch, but it made no difference. I found that with the brake switch disconnected the two lights stayed on.

My gut feeling is still an ABS sensor or a reluctor ring which I would need to change to find out. I am not sure if any ABS diagnostic tool would read the problem on my vehicle. I would like to hear what your thoughts would be on this problem. Thanks again for the help you have given me in the past.
Bill Kerr



A The ability to read the live data from the ABS system whilst driving would allow you to compare the readings from the wheel speed sensors and this would very likely quickly expose the problem. If you did want to go down this route gendan.co.uk do have a unit (the Foxwell NT530+ Full Systems - Jaguar Land Rover) available for £164 that should cover this on your Land Rover. It would be worth checking with them on 01792 588002 to confirm the compatibility.

The sensors can be tested individually using an ohm meter and the readings should be equal and should be between the range of 776-1458 Ω.

It is also possible to check these by viewing the waveform, but this is really only clear with a 'scope that would display the waveform on a graph, as watching the alteration on a meter's display does not give a clear enough display to be able to ensure that the waveform is smooth.

The fault could also be within the transmission control module or the communication between the TCM-ECM and the ABS module. If this were the case, it may explain why the ABS light is not on. This is something that would need to be checked using a diagnostic scanner.

With this in mind, I would also carry out a check of the multiplugs and the wiring on the ABS, TCM and ECM. A poor connection in this area may be the source of the problem.

I can also advise that Autodata informs me that there is a common issue with the Hill Descent System on your vehicle that is normally due to Hill Descent Control switch wires broken. These can be found at the base of the gear lever and so I would recommend as a first step that the gear lever gaiter be removed and the wires on the switch are checked.

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VAUXHALL VECTRA

Constant display illumination

Q I wonder if you can help me with my old 2000 Vauxhall Vectra Estate with the 1.8 Z18XE engine? The multi-information display panel unit does not go out when the ignition is turned off and hence drains the battery. The speedo, rev counter, fuel, temp and warning lights all go out.

I suspected the ignition switch but on removal of fuse F29 it still stays on. The one fuse that turned it off was F22. Can you guide me from here before I start pulling everything apart.

Wes Keeley

A The fuse number 22 controls a wide number of units, including the A/C, the audio system, the digital multifunction display, the engine coolant blower motor, the hazard warning lamps and the instrument panel warning lamps.

Although fuse 29 does also control the instrument panel, it does not control the illuminated digital display that is remaining on, and so this would be expected. The feed for the multi-function display comes via a Blue/Black wire along with a Black/Brown wire from the engine control module. It also has three feeds from the audio system (all Brown/White) and a Black/White wire from the lighting system.

In order to determine the source of the remaining feed when the ignition is turned off, I would consider removing fuses 7 & 8 which control the coolant blower motor, to ensure that a back feed through the relay is not the source of the problem. In a similar test I would remove fuse number 38 as this controls the A/C, cruise control, digital multifunction display, engine coolant blower motor and brake lamps.

Fuse number 22 is also within the circuits of the multifunction (body) control module, and so the problem may be within the circuits of the fusebox/control module.

With this in mind the first action would be to attempt a system reset by removing both leads from the battery and then holding the two disconnected leads together for around 30 seconds.

This will effectively drain any capacitive charge within the system. Once the battery is then reconnected, this may have resolved the problem. If this is not the case, it will require a step-by-step tracing of the circuits to reveal the source of the power to the display causing the constant illumination.

VAUXHALL ASTRA

Battery advice

Q Can I fit a non-Stop-Start battery to my 2016 Vauxhall Astra diesel that has Stop-Start, but I never use? There is a big difference in price and some suppliers list cheaper alternatives for non-Stop-Start.

Ian Browning

A I am presuming you are comparing an AGM (Absorbent Glass Mat) battery against a standard lead acid battery. The reason the AGM battery is used on vehicles with Stop-Start capability is due to its ability to store more energy per unit weight than lead acid batteries, making it ideal for the Stop-Start application.

Whilst in theory replacing the vehicles battery with a standard lead acid battery may be possible, the reason why I would advise against this is because an AGM battery used in the Stop-Start applications has a lower internal resistance, which allows them to charge faster and recover more quickly.

This is considered when the charging system used in the vehicle is designed, and so it is specifically designed to be used with the AGM battery. The charging system would not be suited to a standard battery and therefore the standard battery may have a reduced life from the charging regime that it would be subjected to.

VAUXHALL ASTRA

Gearbox oil

Q I would like to change my gearbox oil on my 2016 Astra K 1.6 Diesel, but find different grades listed on the popular internet sites! I have some Carlube EP75-W90 Hypoid gear oil semi-synthetic and just wanted to check if that would be OK?

Ian Browning

Thank you for supplying the registration number, with this I was able to confirm the details for you. The gearbox on your Astra does not have a level plug and so it is important that the correct amount of oil is used to fill the transmission after draining down. The capacity is 1.8 litres, and the instructions also advise that a new drain plug is fitted with locking fluid.

The oil type is specified as 70W BOT 303 mod Synthetic. This is a modified low viscosity manual transmission fluid. The Carlube EP75-W90 is a hypoid oil and would not be suitable for the transmission in your Astra.

VAUXHALL MOKKA

Service details

Q I have a 2019 Mokka X 1.4 petrol with 28,000 miles. Engine No. B14NET. I was pleased to see the article in the March 2025 edition of *Car Mechanics* as the vehicle highlighted is similar in age and spec to my own.

I notice at the end of the article it says that the auxiliary drive belt should be replaced every 100,000 miles or 72 months whichever comes sooner.

As my car will be six years old at the end of June, this will be a consideration for me, but does this car in fact have a drive belt?

I went onto the Vauxhall forum and there seems to be a debate about whether this car has a drive belt or a timing chain. The final outcome seems to conclude that the car has a timing chain.

If this is the case, can you confirm that should the car have a chain, when should this be replaced? I should add that I am meticulous in the regular servicing and repairs of this car.

Brian Cochran

A I can confirm that the engine in your 2019 Vauxhall Mokka does have a timing chain. And so no action is needed in regard to this. The auxiliary drive belt that is mentioned in the article is referring to the drive belt which runs around the alternator, water pump, etc. And although this does have no critical effect on the main engine components, if this were to fail then It would have the consequence of allowing the engine to overheat and prevent the battery from charging. It would also prevent the operation of the power steering.

For these reasons it is deemed that after 100,000 miles or 72 months a replacement should be fitted as a preventative measure.

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HYUNDAI COUPE

Transmission service

Q I have acquired a 2008 Hyundai Coupe auto and having got on top of its problems, I am turning my attention to general maintenance.

The vehicle came with a stamped service book but there is no mention of any work being done on the transmission. It has done 90k miles and I am wondering whether a change of transmission fluid is advisable and if so, is it a complicated operation.

Phillip Claridge

A The service information I have for the automatic transmission fluid is that it should be drained and refilled at five year or 50,000-mile intervals. This is part of the service schedule and so may not have been noted separately in the service book.

The job of draining the gearbox oil is quite straightforward and there is a drain plug at the base of the gearbox. This at the bottom centre in the casing and will require tightening back to 32Nm when replaced. The gearbox is refilled via the dipstick tube.

The transmission fluid type is SP-III and the capacity is given as 7.8 litres, although this will include the torque converter and so this amount of fluid will not be needed for the oil change.

The fluid should be changed when hot, and care should be taken when draining hot fluid. With the engine running and your foot firmly on the brake, the selector lever should be moved through all the positions and then moved to the 'N' position.

After turning the engine off the drain plug should be removed and the fluid drained into a suitable container. The drain plug should then be replaced and the fluid topped-up with a similar amount to that which was drained out. The engine should then be started and the gear selector moved through the different positions before checking the level using the dipstick, whilst the engine is still running.

It should be remembered that having just topped the gearbox up via the dipstick tube, it may be difficult to obtain the correct reading for a short while, until the fluid has fully drained down the dipstick tube.

If the fluid appears brown in colour then the process should be repeated to help replace the oil in the torque converter which will not drain out in the process.

HYUNDAI i30

Wiper problems

Q The car in question is a 2012 Hyundai i30, fitted with the 1.6 diesel engine. It has covered 120,000 miles. About 4/5 weeks ago, the rear windscreen washer stopped working. The front washer was working. Initially, I thought that the electric windscreen washer pump, which is fitted inside the right wing was on its way out. I had a quick look – checked for voltage at the plug-in connection. I got what I would describe as a 'flickering current' at the wee terminal for the rear washer. Two weeks ago, the front washer stopped working.

Normally when you push the wiper switch stalk down towards the dash to spray water on the rear screen, the rear wiper would operate for two or three strokes. Similarly, when you pull the wiper stalk towards you to operate the front windscreen washer the front wipers will start to operate and do three cycles.

Now when I push or pull the stalk, in addition to the washer not working, the wipers will not work. The wipers work normally if I switch them on manually. I took off the wee electric motor and checked it across a battery it works fine. When I again tried to check for current at the connection, I can now only get a very low 'flickering current' on the terminals for the front washer.

The terminals for the rear washer do not produce any reading when I checked with a multi-meter. The fuses are fine.

I called in to a garage which does a lot of work on Hyundai, to see if any one there had an answer to my problem, the garage has not come across this problem before – it is not unusual for washer motors to stop working – and they don't even blow the fuse.

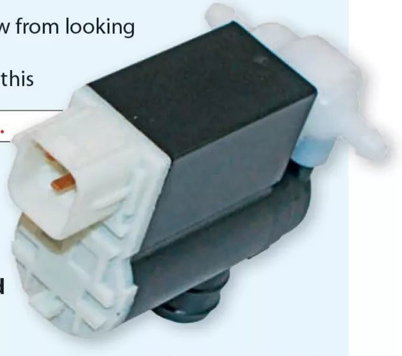
I have been advised to call back on Tuesday when they will hook it up to a diagnostic scanner – hopefully something will show.

Now it gets weird. Today I did a round trip of around 230 miles. There is a wee gauge in the dash which tells the average miles per gallon consumption. When that model was new the brochure said the car would do 63mpg. Over the past two years on long journeys with steady driving the gauge has shown at best 59mpg.

Today the gauge which shows the average mileage is telling me that I am averaging 73mpg – I know from looking at the fuel gauge that this figure is wrong.

I don't know if the washer, wipers and the monitoring gauge are linked. Have you ever come across this issue, or what are your thoughts please?

Michael Carty



The Hyundai i30 washer pump.

A There are two possible scenarios. The first is that the wash/wipe switch assembly has an internal problem and is causing a problem with the voltage supply, and the second (and more likely) cause to the problem is that the body control module is at fault – this could be confirmed using diagnosis equipment using Hyundai software.

It may be worth checking the connecting plugs to the body control module, but this is located behind the centre fascia panel and requires the fascia centre panel and the centre fascia lower tray to be removed to gain access.

Unlike the Citroën/Peugeot models, which do have a BCM reset procedure, there is not a similar routine given for the Hyundai units. But it may be worth disconnecting the battery from both battery leads, then touching the two disconnected leads together. This should discharge any capacitive current in the unit and may reset it.

If this makes no improvement, then a full diagnosis using Hyundai software may be required.

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HYUNDAI i20

Folding mirrors

Q I recently purchased a 2020 Hyundai i20 Premium Nav T-GDi Auto, with the 1.0-litre Kappa engine. I am generally pleased with the car, but one thing is bothering me – I can't seem to turn off the exterior auto folding mirrors. As on most modern cars the mirrors fold and unfold as you unlock or lock the car. I have carefully read the handbook (400 pages!) and looked on the internet, but I can't find how to turn the auto folding function off.

Some people advocate removing the relevant fuse, but I am certainly not going to do that. Others say there is an on/off button just above the mirror adjusting switch in the driver's door armrest, but on my car, this is just to manually fold or unfold the mirrors.

On my other cars I have always turned this function off especially in the Winter. Do you know if it is possible to turn the auto fold off on this car?

Mark R Dawson

A The operation of the automatic folding mirrors on the earlier models was controlled by a rocker switch to select either the auto function or operate the mirrors manually. By pressing the button, the mirrors will fold and by pressing the button again the mirrors should unfold, selecting auto would allow the auto fold upon locking.

On the later models which I believe yours is, the single button has only a press option to either fold or unfold the mirrors.

On these models the auto function should be accessible in the onscreen menu under convenience settings. Scrolling through this menu the auto fold when locking function should be seen and this can then be turned off.

If this isn't visible it may be the case that the dealer will need to disable this function, but from the details I have this should be in the on-screen menu.

HYUNDAI i40

Fuel problems

Q We have an issue with our 2013 Hyundai i40 estate 1.7 diesel, which is currently having to be manually primed before starting. After waiting a minute, we try to start it, but it won't. If we then manually prime, then engine starts. We have realised that this will only occur when the fuel tank is quarter full or below – with a full tank there are no problems. No issue on how it drives.

Recent work done at 160k miles is new timing chain, sprockets, etc., clip that holds injector in came out which got fixed.

Do you think car now needs new primer pump which is around £215 at Hyundai?

James Forrest

The fuel primer which is part of the fuel filter housing may be allowing air into the system.

A From the details I have, the fuel system on your Hyundai does not have an in-tank low-pressure pump. This means that the system relies on the main high-pressure pump to draw the fuel up through the system.

When the fuel tank is low, this is a more difficult task, but one that normally would be easily achievable. The lack of an in-tank low-pressure pump would normally only present a problem when renewing the fuel filter, or dismantling the fuel delivery system. Hyundai overcome these problems by fitting the primer pump, to allow the fuel to be drawn up through the system to bleed out the air.

The problem you have suggests that at some point the fuel in the line is falling back to the tank, and this is the reason you need to bleed out the system before starting in the morning. This is normally due to an air leak at some point in the system.

This leak may be from any point in the system and the primer pump may be the cause, but before replacing this I would carefully check the injector leak-off pipes and the return system for any lightly damp patches. Carefully check the T-piece connection back to the filter and around the pressure regulator valve. It is also worth checking and possibly renewing the fuel filter – another common area for a diesel or air leak to occur.

Any slight sign of leaking diesel will be an indication that air may be able to enter the fuel circuit, and this may be causing the problem.

Because the diaphragm of the primer pump is regularly operated, it may have failed and this could be the problem, but I would certainly explore the other possible cause first.

HYUNDAI i30

Steering noise

Q A 2015 Hyundai i30 1.6 diesel we looked at recently developed a noticeable creaking noise whilst turning the steering. In the extreme warm summer, it seemed louder. However, when there was rain it quietened down.

First of all, I thought it may have been a dry balljoint, track-rod end or top strut bearing. This is what it sounded like whilst standing beside it.

I ended up disconnecting both track-rod ends and turning steering from side-to-side, the noise was coming from the steering.

I informed the owner of my findings and he eventually took it to our nearest Hyundai dealer. They did solve the problem telling him they replaced a bushing that was worn completely to the metal. As he is not mechanically minded, he didn't understand. He was happy to have it fixed.

I do not understand what bushing this could have been. Have you ever encountered anything similar? I would appreciate your opinion on this matter as it has me confused.

Martin Duffy

A From the details I have there was a problem with the steering on the i30 which was due to an unsatisfactory design of the flexible coupling gear between the electric power steering (EPS) motor and steering column.

The remedy was to remove the steering column and the EPS motor and to fit a modified flexible coupling gear.

This coupling, from the details I can see on the workshop manual, consists of two universal joints, with a sliding coupling to allow for movement. The only bushing is in the base of the steering motor.

I would suspect that possibly this bush was worn, or a more likely scenario is that one of the two universal joints had worn.

If the problem was in the rack itself, I can see no replaceable bearings in the unit so am unable to comment on what may have been a problem in this area.

I would be pleased to hear from any of our readers if they have experienced similar problems, as I do consider this unusual wear for a 2015 vehicle.

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HYUNDAI i30

Passenger door

Q Please can I call on your guidance regarding a problem with the front passenger door on my 2015 Hyundai i30 Tourer. A few days ago I noticed that the tailgate release was intermittent. Locking and unlocking seemed to get it going again and this happened about three times until yesterday when the tailgate would not open at all.

Some research indicated that the issue can be related to another door and, lo and behold, the front passenger door does not open from either the outside or inside. I can open the tailgate by locking the car then using the dedicated tailgate button on the remote.

It would seem that the lock on the front passenger door has failed and this interlocks somehow with the tailgate release when the car is unlocked normally. My question – is there a 'trick' to open the passenger door or will I have to butcher the door card to gain access to the door's internals?

Andy Howe

A I suspect that the problem will be down to the door solenoid which has failed. This is not an uncommon problem, and one that I have come across a few times. There are a few ways that can be tried to free the door that do sometimes work, but if these fail then the door panel may need to be removed to access the lock/solenoid.

The action that can often free the stuck solenoid is to first to ensure that the battery is fully-charged up, with the engine running, then operating the internal central locking button at the same time as attempting to open the door. This can sometimes allow the solenoid to move.

If this does not work then with the engine off, using the fob to operate the central locking from the outside while at the same time using the handle to open the door can again sometimes allow the lock to release.

If this does not work, then the passenger seat should be pushed as far rearward as possible, and the door panel will need to be removed. This is not an easy task, but it can be made a little less awkward by removing the passenger seat and prying out the door seal around the edge of the frame. This is not always possible, but if this can be removed it will give a little extra manoeuvring room.

Due to the position of some of the fixings, damage may occur but once the panel is moved sufficiently to access the lock, this should release with a sharp knock. If it is still solid, then prising the body of the lock apart to release it may be required.

HYUNDAI i20

Oil leak

Q Whilst checking over my sister's 2009 Hyundai i20 1.2 petrol prior to MOT, I noticed an oil leak emanating from under the plug leads cover. Removing this cover revealed quite an oily mess which had worked its way towards the coil packs area. I understand that a blocked PCV valve is one possible cause for this happening – and for relatively high oil consumption – which appears to also be the case here.

The car has just over 90K on the clock. It goes fine and there are no other obvious signs of where the oil is going.

So, my question is this, does my sister's car have a PCV screwed into the cam cover? My local Hyundai dealer says no, yet there is something that looks (from pictures I've seen online of other Hyundai model cam covers) very like one between the engine breather pipe and the cam cover!

I'm somewhat confused and curious.

Thank you in advance.

William Bamber

The PCV valve shown for the Hyundai i20 and located in the cam cover.

A The workshop manual I have certainly does show a PCV (Positive Crankcase Ventilation) valve in the system and this is located in the hose from the cam cover to the front of the engine.

The instructions in the workshop manual state that if after disconnecting the vapour hose the engine should be run at idle then you should place your finger over the open end of the PCV valve to make sure that intake manifold vacuum can be felt. The manual says that if vacuum cannot be felt the hose should be cleaned or replaced.

This suggests that the PCV valve is part of the hose, and it may be that the parts catalogue shows it as a hose and does not describe it fully as the PCV valve.

Having said this, the next section in the manual describing the replacement of the PCV valve does show it as a separate item and gives a tightening torque setting of 7.8-11.8Nm when the valve is inserted into the cam cover. The diagram also shows the end of the valve as being threaded.

With 90,000 miles on the clock, if this valve has never been checked or replaced, then I would agree that the blocked valve could be the source of unwanted pressure in the crankcase/engine, and this may allow the oil to blow past the gaskets, and past the piston rings allow a higher level of oil usage.

The part number from the details I have should be 2674032804 but this would need checking against the vehicle registration number.

HYUNDAI ix35

4x4 lock up

Q I have a 2015 Hyundai ix35 2.0 diesel. The problem I have is that whenever I press the 4x4 lock-up button nothing happens. The light on the dash turns yellow but I know the four-wheel-drive is not working as with the vehicle jacked up the shaft is not turning. Could this problem be electrical?

Leo Cullen

A The four-wheel-drive on your Hyundai is controlled by the vehicles systems and the ix35 is not a vehicle designed for off-road use. The system will detect if this condition is needed and when this occurs the centre diff lock will engage. The four-wheel-drive is not a permanent lock-up and will disengage, even if locked in when the vehicle considers it is not needed.

This diff lock will only operate at speed below 19mph and will only operate when required. Jacking up the vehicle will not enable the system to be tricked into thinking that one wheel is spinning as the viscous coupling will not engage under these conditions.

The system does operate without a great outward effect but should be effective in snow or mud situation.

If the light is on when the button is depressed and not flashing then it would be considered that the system is working, but the system could be fully checked using Hyundai diagnostic equipment.

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KIA CARENS

Oil leaks

Q I have a bad oil leak off of the right rear subframe on my Kia Carens 3 2.0 CRDi and I'm finding lots of minor leaks having replaced the rocker cover gasket.

I started removing all the bits off the back of the engine looking for wet spots and I also removed the diesel pump off the end of the camshaft. This job resulted in no apparent leaks that I could find and I decided the black oil which was pouring on to the ground was more likely to be contaminated power steering fluid (jury still out on that) or from the oil cooler piping that disappears at the front wheelarch.

Anyhow the Kia has been apart for a month, all holes were plugged and the pump kept in a plastic bag. So, I reassembled it to a point I could start the car and force a leak.

No start, the battery was recharged overnight and still no start. I checked the common-rail – loosened the number one injector pipe, no leakage. I removed the input pipe to the rail and turned the engine over, nothing!

I started removing and checking all the input/return and small return pipe – there was a little pressure in the pump, it had drawn in some fuel but the output pipe was dry.

I have a spare pump but before I waste my time has this Kia got an electric lift pump because if that has failed it is probably the next part to check.

Tony Nicholson

A From the data I have on your Kia, yes it does have an electric lift pump and this is controlled by the relay number 6 in the under-bonnet fusebox and by fuse number 6 (20A) in the under-bonnet fusebox.

The lift pump is in the fuel tank and is accessible from under the rear seat – once the seat is lifted the access cover should be seen. This is held down with four screws. It can then be checked if the electric lift pump has a feed when the ignition is first operated. If the pump is being fed, confirming that the relay and fuse are good – it may be the case that through lack of use the electric pump has simply become frozen in position and it is often the case that a good tap with the handle of a screwdriver on the top of the pump can sometimes prompt it back into action again.

KIA SPORTAGE

Mud flaps

Q I've just changed my vehicle to a 2021 Kia Sportage 1.6 CRDi ISG 48v GT-Line S, as my wife and I both have difficulty getting in and out of a car. My question is, are the mud flaps for this vehicle purely cosmetic or do they actually stop the mud splashing up the side of the vehicle, hence making it cleaner getting in and out of the vehicle – and are the flaps from Kia screwed or clamped to the vehicle.

Can I also ask? The Kia engineers said that the service interval was 20,000 miles – not sure how many months this would be. Surely if this is a fact there should be at least a couple of oil changes within this period, but they disagree.

Also, I enquired (for top-up purposes) what coolant is recommended and was told the same colour as what's in there – this seems a bit vague and also, I don't know which brand is what colour. Any assistance you can give me on these points would be much appreciated. Your opinion would be much appreciated. Many thanks.

Ray Bradford

The slim but effective mud flaps which should help protect the body.

A The mud flaps do give a level of protection to the vehicle from the dirt thrown up and so having the mud flaps fitted should help preserve the cleanliness of the body. The mudflaps are fitted with securing screws, making them very secure, but no drilling is required as the fixing holes are the ones used to fix the inner wheelarch.

One product you may wish to try to aid your entry and exit into the vehicle is the simple car handle aid, https://bit.ly/CMKMCEA – it does need to be dropped into the door latch after opening the door, but may be just the thing to ensure you can get in and out a little easier saving the possibility of your clothing rubbing against the vehicle.

The service interval I have listed for your Kia is 13,000 miles or 24 months under normal conditions, there is a shorter period of 6500 miles or 12 months listed for adverse conditions but I would not expect your vehicle to come under that category. The modern oils are made to withstand the more extended service periods, and if sticking to the maximum of 13,000 miles I would not expect any problems to occur.

The cooling system on your Kia is special due to the hybrid unit, and this should not be refreshed without using specialist diagnostic equipment, as such I would not expect it to need any topping-up for some years yet. The fluid type is shown only as original and so I would at this time only purchase it directly from the dealer if needed.

KIA PICANTO

Fraying seat belt

Q I own a 2012 Kia Picanto 1.0. The seatbelt driver's side is fraying at the edges. I have taped this with insulating tape. What can I do to solve this other than changing the belt? I look forward to hearing from you.

Brian Williams

A I would first say that the insulating tape should be removed as this may impair the seat belt operation. You do not mention the point the belt is actually fraying but I suspect this is at a point where buckle slides through the belt, and this is why I would recommend the tape be removed.

It is also difficult to assess quite how bad the problem is, but as you did supply the registration number and as there is no reference to the problem on the last MOT, I suspect that this is only a light fraying at this time.

If this is the case then the best solution would be to use a lighter to lightly warm the edge of the seat belt, this will melt the nylon cords of the belt smoothing over the frayed area. This does need to be done with caution and only a light exposure to the flame is needed to smooth the belt over. It the body of the belt begins to melt this will deem it unrecoverable.

If the fraying is too far gone to revive in this way, then the only answer is for a new seat belt to be fitted. This is of course a safety item and not an area to compromise on.

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KIA RIO

Gear cable

Q My niece owns a Kia Rio 1.2. When the breakdown truck arrived, the driver informed her the gear linkage cable had snapped. Her dealership was closed where she bought the car but her neighbour who is a mechanic confirmed the fault. She contacted Arnold Clark to book it in as her warranty runs out soon.

After many phone calls to other branches, their Head Office informed her the soonest they could diagnostic check the car was in a few weeks – and until then when they do the check, they could not authorise a courtesy car which was understandable but does not help the situation.

So, she accepted this date. She uses the car every day for travelling to work and nursery drop off. She is now willing to pay for the repair as it is cheaper than hiring a car for six weeks.

The problem now being I have checked with several garages some of whom do not want the repair because of the time involved and being told specialist tools and others ridiculous prices. Would it be possible for myself to do this? I have repaired engines and such with cars quite a while back or have I just answered my own question? Any advice would be much appreciated Steve.

Hugh Mellors

A None of the reference sources I have, give a time for the job, and this does make it difficult to assess the situation. On such a new vehicle where the problem would normally be under warranty, I would expect that no local mechanics have carried out the job, and so this makes it difficult to quote a price. For this reason, most will give you a high estimate to cover the unknown.

Gear change cables can be tricky to replace, due to the route through the vehicle and into the engine bay. It is normally the grommet between the interior and engine bay which gives the most problems, as this is normally a tight fit, and rather inaccessible beneath the heater assembly.

The job would first involve removing the gear selector lever and the centre console, and then if (as most do) the cables travel beneath the carpet, then this may need to be released or cut. I have changed various cables on different vehicles and normally the carpet can safely be cut where it travels beneath the centre console. As this area is never exposed, the cut is not detrimental and will assist the easing of the cables into place.

I do have details on the removal of the gear selector lever and looking at this and at the connection points on the gearbox, I can see nowhere that a special tool would be required.

The adjustment of the cables is carried out at the selector end, and this is built into the end of the cable, and locked in the correct position to give a smooth neutral.

KIA CEED

Hesitation & poor brakes

Q I recently purchased a 2014 Kia Ceed 1.4 CRDi with 110,000 miles on it (engine D4FC). I have serviced it myself, including engine oil and filter, air and cabin filters, new gearbox oil (which was milky white).

The engine ticks over smoothly but at around 30 to 40 miles per hour it feels hesitant and is OK on a faster speed. I have cleaned the MAF sensor with the proper cleaner and let it dry. I have also cleaned the EGR valve, which was gunked-up, but I did not take off the EGR plastic manifold as it looked quite clean.

I have cleaned both O_2 sensors which don't look like ordinary O_2 sensors (more like probes). Are there any other sensors that can be cleaned?

Have put injector cleaner in fuel tank and I have a new fuel filter to put on, but do I need to have a donor battery to keep all the settings as I will have to take battery out to change filter?

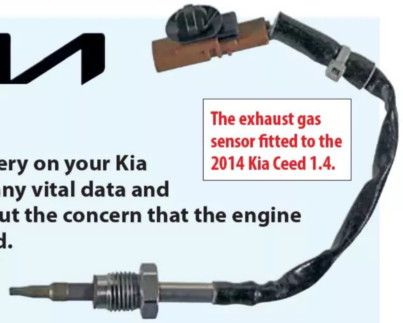
Also, I have a few other concerns these are: The brake pedal goes down about halfway before it bites, and you have to press hard. I have done a brake servo test (according to online testing) and seems good.

I have renewed both front discs and calipers, and the pads sliding pins are free, the back brakes are free and working properly. I have changed the brake fluid and bled the brakes four times, but I am still not getting a full pedal. What else can I do?

Your help would be appreciated greatly.

Gerry Brandley

A I suspect that the two O_2 sensors you cleaned were in fact exhaust temperature sensors. These are as you describe like a probe, cleaning these sensors would not have any positive effect and I always advise for this reason against attempting to clean O_2 sensors or any sensor that does detect temperature.



The exhaust gas sensor fitted to the 2014 Kia Ceed 1.4.

Disconnecting the battery on your Kia will not allow the loss of any vital data and so this can be done without the concern that the engine parameters will be altered.

I would replace the fuel filter next and there is also an advisory on your vehicle from Autodata that mentions a common fault on this model was due to the In-tank fuel filter becoming blocked due to sediment build-up. The remedy is to replace the in-tank filter with part number 31090D7900FFF.

If after the replacement of the filter the problem is still present, then this may be a problem with one of the temperature sensors on this engine, the air intake, coolant, fuel and exhaust temperature sensors should be checked using diagnostic equipment to ensure that they are reading correctly as an incorrect reading in one of these sensors could give the symptoms you have.

With regard to the brake pedal feel this may be for several reasons, and these could include the servo, the brake master cylinder or the ABS pump. One test that may help would be to clamp off the brake hoses to each wheel in turn to see if the feel of the brake pedal alters, if this does then it may be the case that a caliper is at fault, but if there is no change then the possibility that air has entered the hydraulic modulator (ABS pump) must be considered and if this is the case it will need operating using diagnostic equipment to satisfactorily bleed the air from the system.

This would be the next step, but if this after bleeding did not produce a suitable pedal, then either the brake master cylinder or servo would need to be considered as the source of the fault.

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KIA SPORTAGE

Electric windows

Q Are there any common faults you know of on the windows on a Kia Sportage? The driver's side window will not work with the button on the door but works fine from the driver's door switches?
Stuart Anderson

The driver's door switch pack may be causing the issues.

A **You do not mention the age of the Kia, but in general I am not aware of any specific issue that would cause this. The Sportage has been manufactured since 1995 and comes in a wide range of engine sizes.**

The most common reasons for such problems are the switch pack or a failure of the wiring loom between the door and the body. It is very common for one of the wires in the loom to fail and this then can prevent certain functions from correctly operating. This would be the first area to check.

As the window does work from the other switch, then the motor can be eliminated as a possible reason for the failure.

I would imagine that this is a job you would be capable of, but it is difficult to know how long this may take, and also as this isn't covered in the manual, quite how difficult it will be to feed the cables out of position and back into place.

I do know that the cables I renewed on a Kia Sedona did take a while to replace and did have me cursing as I navigated the carpet and the grommet at the bulkhead. One of the biggest issues is that the cables do come as a pair, making them less mailable and more difficult to guide into position.

KIA CEED

Oil concern

Q I need to top the oil level up on my 2016 Kia Ceed 1.0 T-GDi. The engine currently has Mobil 1 0-40 FS in, however the ESP formulation of the same viscosity is £5 cheaper at present in ECP. Do you think these would be compatible with each other. Given the price of these 1L bottles if I can save a fiver I will, particularly as it is going to be drained out in about 4-5 months time.

I know it's supposed to have 5W viscosity oil, but I've always used the 0W for slightly better cold start protection.
Anthony Pattinson

A **The ESP Formulation oil is Emissions System Protection; this means it has a lower sulphated ash and phosphorus content than the FS formula. It also contains less calcium in it. It is a newer formula and as it is also Mobil 1 it should be perfectly acceptable to use as a top up. This formula is actually supposed to be better for the direct-injection petrol engines.**

KIA SORENTO

Cutting-out

Q I have 2005 Kia Sorento 2.5 diesel which cuts-out while driving. Engine light come on but not every time. Code is P1188 and according to code it can be loads of things. Had service and no fuel leaks. Check inside tank, all clean.

Do you advise to check anything else before I remove the injectors?
Jacob

A **The code P1188 is a fuel control fault code, but not one that is specific to the Sorento. It normally indicates a pressure or mixture problem, but this does vary according to the vehicle.**

Autodata does have information on a common problem that can occur with your Kia, this fault does tie in with the problem you have reported of cutting out and is caused by the engine wiring harness chafing on the engine control module (ECM) mounting bracket and cover plate causing short circuit.

The remedy is to repair the wiring loom and re-route it away from the engine control module, ensuring that its new route will prevent it from chaffing at any contact point.

It would certainly be worth checking this first. The engine control module on your Kia is located in the vehicle by the driver's footwell and should be covered by a protective plate.

Have a problem vehicle? GET IN TOUCH...

If you have a problem vehicle, *Car Mechanics* has the answer in the shape of our technical editor STEVE ROTHWELL. Contact Steve, as detailed below, for FREE advice on all car-related problems. Please help Steve to help you by giving as much information on the symptoms as you can – including the VEHICLE REGISTRATION NUMBER.

As *Help!* is a free service, some complex questions may require more time and resources than we can reasonably allow – when this is the case we will let you know.

Steve will reply to all queries as quickly as possible, but please allow up to 28 days for a reply. Difficult/complex questions or those requiring research may take a little longer – please be patient.

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Diagnostics Doctor

Steve Rothwell answering your **ENGINE MANAGEMENT** queries

FORD ECOSPORT

Intermittent splutter

Q My wife owns a December 2015 Ford EcoSport Zetec TDCi 1499cc diesel, with 57,000 miles covered. The problem I have is that the engine has an intermittent splutter, maybe once or twice during a short journey. Our mechanic diagnosed a faulty injector and replaced it, to no avail. I then got him to remove all the injectors and had them refurbished, still no better. Now we have the added problem with the traction control or stability control light, it comes on while driving – the car then loses power, and this can be rectified by quickly switching off the ignition and turning it on again.

Until the next time, maybe ten minutes later or a couple of days. My main concern is that my wife performs this operation while driving the car which is worrying to say the least.

To date she has spent around £1600-£1700 on diagnostics tests and labour charges. Please say you can help?

Alan Hall

FOXWELL
NT200E
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The Foxwell NT200E which would be sufficient to read off the fault codes.

A **The illumination of the traction control light will be connected to an electrical fault within the engine control system. As this does clear when turning off the ignition and then turning back on again, this does confirm that the fault is likely to be a sensor, or the reading from a sensor that it is triggering the light and the problem.**

The codes will need to be read from the engine to determine the source of this problem, and it is difficult to say without these codes what the problem may be. But given that your mechanic has replaced the injectors, it may be the case that the fuel pressure is the source of the problem.

One common problem that does occur on the engine in your wife's EcoSport, that would give the symptoms you have, is that the turbocharger wastegate regulating valve can stick.

This gives a code indicating a boost fault such as P0299, P132B or P2599. If this is the case, the remedy is a new turbo wastegate regulating valve. The part number for this is 1 885 485.

Ideally, reading the codes from the system before switching the ignition off, and then on again, would be the ideal situation and should reveal the fault. The codes can be read from the on-board diagnostic socket behind the small cover located to the right of the steering wheel at the lower section of the dash panel.

This could be done with a low-cost code reader such as the Foxwell NT200E Diagnostic Scan Tool available for £34.94 from Gendan. As you wrote in and may not have internet access, I am pleased to say the company can be contacted by phone on 01792 588002.

Once the code is confirmed at the point of failure, the diagnosis should far more accurate.

FORD FUSION

Runs uneven when cold

Q I have a 2009 Ford Fusion 1.4 TDCi. The engine was misfiring, so I took it to the garage for them to have a look and they replaced number one injector. When starting from cold the engine makes a knocking noise and runs uneven but starts to disappear as the engine warms. The garage did programme the injector and take it for a road test. Any advice would be helpful.

Peter Pope

A **The details I have from the Ford manual show there is no need to programme the injectors on the 1.4 Fusion, and so I am unsure what procedure your garage has undertaken. On the common-rail engine all four injectors do need to be the same single digit code, and so I would ensure that they have fitted the correct coded injector to match the other three.**

The problem may also be that the failure of number one injector was masking a lesser fault on one of the other injectors. I would suggest that a leak-off test is carried out on all the injectors to confirm that they are all operating correctly.

The leak-off test should be carried out allowing the engine to idle for five minutes. After five minutes the correct fuel return leak-off should be between 10-30ml on each injector (maximum tolerance of +/-5 ml). If this level is not correct, then the faulty injectors should be renewed.

The other possibility to consider is that the new injector is faulty, and this should be checked alongside the others when the leak-off test is carried out. If this is the case, or it is the case that the garage has fitted the wrongly coded injector, then they will of course be obliged to rectify this for you.

NISSAN MICRA

Poor starting

The camshaft position sensor on the Micra that the reader has already replaced.

Q I have got a problem with my wives 2003 Nissan Micra (K12) petrol, engine code CR12DE. It has gone from starting immediately, to overnight, needing 3-5 short burst of the starter to get it running when it's cold. It just catches, then picks up and will run. It will then start perfectly, immediately after and every time until its left standing and gets cold again.

On plugging in the code reader, I get no faults but pending cam position sender fault. I changed the CPS to new Bosch one. Now no faults or pending ones shown but still the same problem.

I have now cleaned the MAP sensor, throttle body and checked for air leaks. I have ordered a set of manifold bellow rubbers but could not find a throttle body O-ring that I was sure was right. This did look slightly suspect but have replaced it with two stacked normal O-rings, until I find a correct one.

I am sure I have a decent seal for the time being. None of this has changed the problem. I checked the code reader temperature reading with infrared reading and they were very similar

Have you any ideas you could tell me that will send me in the right direction?

Wes Keeley

A One of the common problems that can affect this engine is a carbon build up in the throttle body, but you have covered this and so I would hope that this can be discounted as the problem in this case.

As this problem does only occur at the first start of the day, and as this is only a delay in starting which does not appear to affect the operation of the engine once started, there are a couple of checks I would carry out.

The first is a basic compression test and I would recommend carrying this out with a cold engine, and then possibly later in the day after the engine has been run to compare the readings. It may be that lack of compression is affecting the initial start-up.

If this does not reveal any potential problems, then I would consider, as you did have the camshaft sensor code, although this is now resolved, that the camshaft actuator may be the source of the problem and may be either not receiving a sufficient oil supply when cold or has become lazy.

Removing, checking and replacing this may be sufficient or you may decide fitting a new camshaft actuator is worthwhile.

Finally, the other possible reason could be that the fuel pump has become slow, and the in-tank pump and filter may be worth checking. A build-up on the fine gauze filter going to the pump may initially impair the starting, giving the delay you have.

VOLKSWAGEN TOURAN

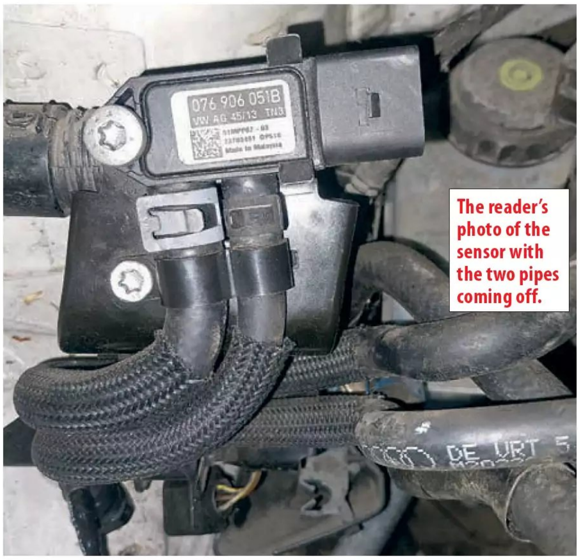
DPF sensor

Q Once again, I turn to you for your expert advice. On stripping down a 1.6 TDI VW Touran to replace the timing belt and water pump, I notice an electronic device with two small pipes. According to good old Google it's a DPF pressure sensor (or something similar), it's mounted among the fuel lines/top engine mounting area.

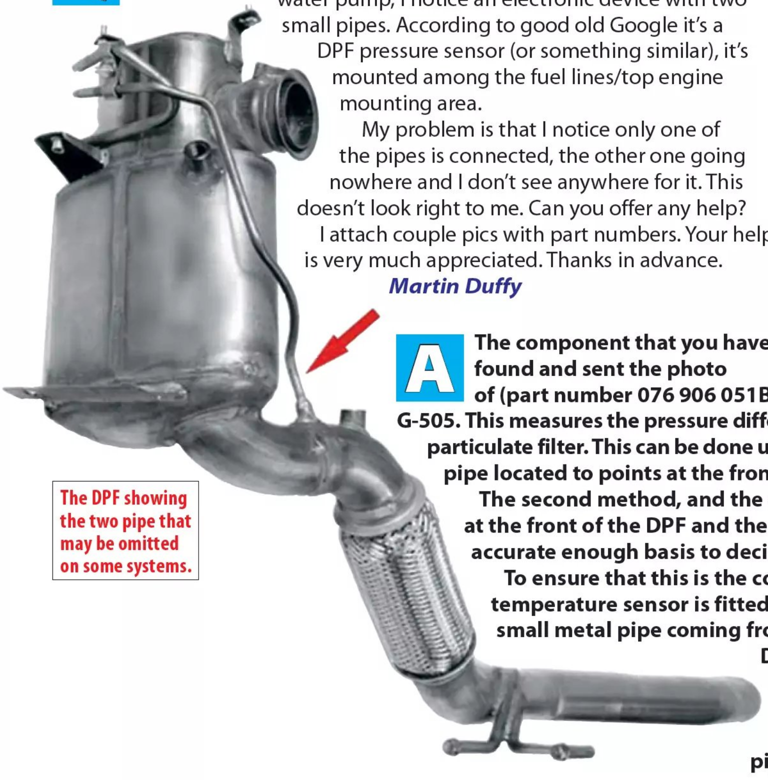
My problem is that I notice only one of the pipes is connected, the other one going nowhere and I don't see anywhere for it. This doesn't look right to me. Can you offer any help?

I attach couple pics with part numbers. Your help is very much appreciated. Thanks in advance.

Martin Duffy



The reader's photo of the sensor with the two pipes coming off.



The DPF showing the two pipe that may be omitted on some systems.

A The component that you have found and sent the photo of (part number 076 906 051B) is the DPF pressure differential sensor and is the sensor G-505. This measures the pressure differential between the upstream and downstream of the diesel particulate filter. This can be done using two different methods. The first is to have the connecting pipe located to points at the front and rear of the DPF to measure the pressure differential.

The second method, and the one used in your vehicle, is to have one pipe connected at the front of the DPF and the other vented to the atmosphere. This gives the sensor an accurate enough basis to decide if the DPF is blocked.

To ensure that this is the correct configuration, you should ensure that only the temperature sensor is fitted in the large pipe after the DPF and that there is not a small metal pipe coming from the section after the DPF leading up to the top of the DPF. The pipe that will not be fitted if you do have the 2nd configuration is marked with a red arrow – if you do not have this pipe then it is correct that the pipe from the sensor is not connected, but if you do have this pipe, then the second pipe from the sensor should be connected to the top of this.

⇨

Diagnostics Doctor
CONTINUED

VOLVO V50

Series of problems

Q I have an ongoing problem with my 2011 Volvo V50 1.6. I have owned the car for 18 months, bought at 147k with full-service history. Injector No.3 failed two weeks after I bought it and was replaced under warranty. Two months ago, it went into limp-home mode. I stopped and restarted the engine, and all was OK again.

I had codes for faults on No.1 and No.4 injectors which I cleared and didn't return. A week later it went into limp-home mode big time and wouldn't rev and misfired. I had just pulled onto an uphill stretch of motorway and narrowly missed a collision with a HGV.

My Volvo was recovered to a garage who got a code for a failure on No.1 injector. I opted to have all three of the injectors replaced at a cost of £1300.

A month ago, it went into limp-home mode and again recovered to a garage who got a code for TPS which was renewed. This morning again the engine went into limp-mode, I stopped and started and all fine.

I have an iCarsoft scanner and got code P212700 TPS sensor switch E circuit low input Gen failure. The garage was meant to have checked the wiring prior to changing the TPS sensor, which I believe is part of the throttle pedal assembly. Does this suggest a fault with the ECM? Not sure where to go from here.

Every single time it has gone into limp-mode and 'engine system service required' comes up. It has either been under acceleration, i.e. to overtake, or pulling away from a junction. It has never happened whilst driving at a steady speed. Thank you.

Chris Jenner

A The previous problems that were encountered with the injectors has now hopefully been resolved and possibly is not related to the problem that has now occurred with the throttle position sensor. But of course, nothing can be ruled out.

The code that you have P2127-00 is, as you have correctly identified, indicating that the throttle position sensor located on the accelerator pedal has a low input. With diagnostic equipment it is simple to check this using live data to check the operation of the pedal movement.

The feed voltage can also be easily checked using a voltmeter and ensuring that Terminal 6 on the plug to the TPS has battery voltage (around 12.4 volts). This is the Green/Yellow wire. I would carry out this check as it is possible that the garage did no more than look at the condition of the connecting plug.

I would also check the connection at the ECU – and the pin connection on this is Cf4 which is the smallest of the three plugs on the ECU.

If the wiring and the connections are good, then it would be worth getting the ECU tested to ensure that the output parameters are not the source of the problems. www.actronics.co.uk or remanx.com can do this for you.

It is often when under load that the engine will go into limp-mode, as this is when the greatest demand is made of it, but it could also be related to the position of the throttle pedal at this point which would be further down than during normal driving.

Diagnostics Doctor

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Common abbreviations

ATS	Air Temperature Sensor
AFM	Air-Flow Meter – not a MAF type (see below). It could be, for example, a vane type
CAS	Crank Angle Sensor
CPS	Crank Position Sensor
CTS	Coolant Temperature Sensor
ECT	Engine Coolant Temperature
ECM	Electronic Control Module
ECU	Electronic Control Unit
EGR	Exhaust Gas Recirculation – meters exhaust gas back to the intake manifold
EML	Engine Management Light
EMS	Engine Management System
EPC	Electronic Power Control
EVAP	Evaporative Emissions Control System
FCR	Fault Code Reader
HT	High Tension – ignition output to the spark plugs
IAV	Idle Air Valve
ISCV	Idle Speed Control Valve – usually operated by a motor controlled by the ECU
LOS	Limited Operating Strategy – if the ECU detects a malfunction, it runs a programme to allow the car to still go, but at reduced efficiency
MAF	Mass Air-Flow meter
MAP	Manifold Air Pressure
MIL	Malfunction Indicator Lamp
PCV	Positive Crankcase Ventilation – takes crankcase gases and recycles back to the inlet system
TBPS	Turbo Boost Pressure Sensor – used by the ECU to regulate turbo output
TPS	Throttle Position Sensor
VSS	Vehicle Speed Sensor
WOT	Wide Open Throttle

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Electronic Diagnostics

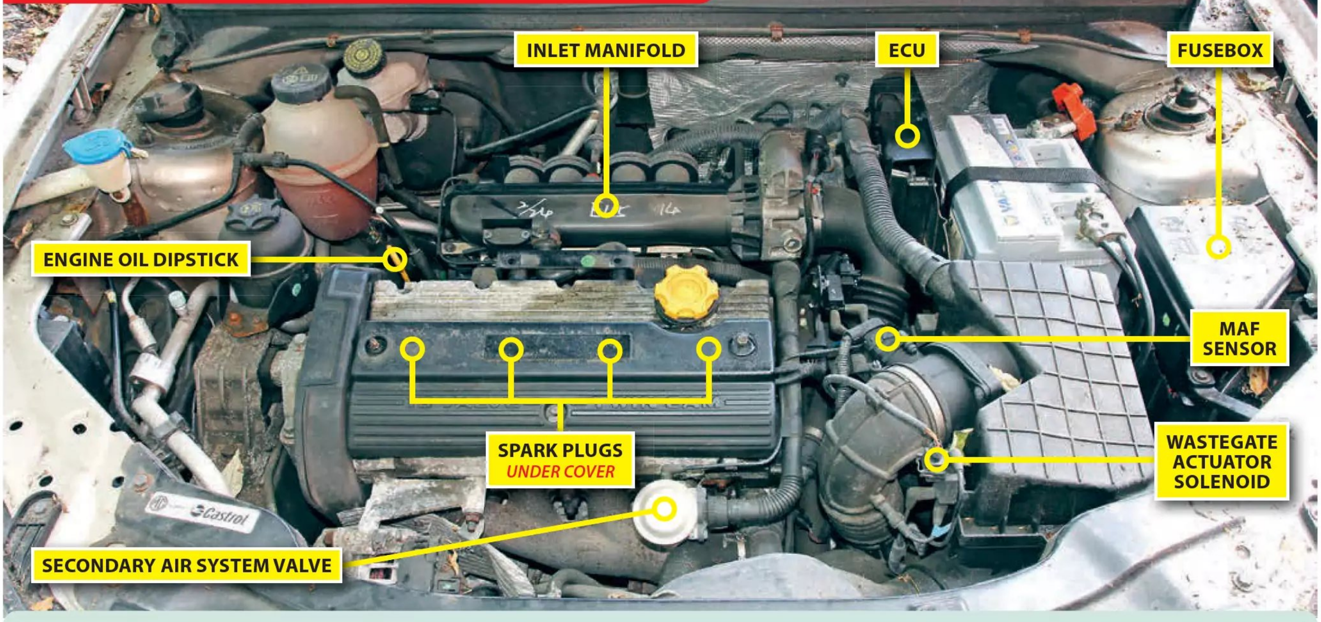
MG6 1.8 TURBO PETROL

Tracing and fixing faults in electronic engine management systems

Rob Hawkins visits Retro Sports Cars to discover some of the issues that can arise with a Chinese-manufactured MG saloon.

"It's very similar to a K-series engine and I've fitted a few of them into the ZT," comments Chris Flanagan at Retro Sports Cars as we look around the engine bay of a rather dusty 2014 MG6 Magnette. The owner of this car mistakenly fitted the cables of a jump-start pack the wrong way round, which resulted in the headlights not working! Chris discovered the body control unit (BCU) behind the dashboard had been damaged as a result of the mistake, which explained why the headlights were not working. At the time of visiting, he'd managed to acquire

1796cc 4-cylinder turbo petrol



TECHNICAL SPECIFICATIONS

Engine	1796cc 4-cyl twin-cam turbocharged petrol
Engine code	18K4G
Engine oil grade	5W-40, 10W-40 and 0W-40 depending on climate
Oil classification	A3
Oil capacity/schedule	4.9 litres with filter every 15,000 miles or 12 months
Gearbox	Five-speed manual FWD
Gearbox oil	Texaco MTF 94 (2.2 litres)
Coolant	Ethylene glycol (OAT – organic acid technology)
Cooling system total capacity	7.9 litres
Brake fluid	DOT 4
Power steering	Dexron III (1.3 litres)

TORQUE SETTINGS

Sump drain plug	**28**Nm
Oxygen sensor	**55**Nm
Crankshaft position (CKP) **sensor**	**6**Nm
Camshaft position (CMP) **sensor**	**8**Nm
Engine coolant temperature sensor	**15**Nm
Engine oil pressure switch	**14**Nm
Spark plugs	**27**Nm
Road wheels	**123**Nm (+/-7Nm)

a replacement BCU and was ready to code it to the car (he has the necessary software) but was waiting to hear from MG to allow him to do this.

On sale between 2011 and 2016, the MG6 won many awards and looked set to be a promising saloon from the Chinese manufacturer, SAIC Motor. However, in true MG tradition, it became regarded as inferior to the likes of the Ford Mondeo and similar saloons, so sales dwindled. It also didn't help that parts supply could be and still is problematic.

"SAIC has discontinued pretty much all aftermarket parts support, and the cars are dropping like flies," remarks Max at Discount MG Rover Spares. "We are trying our best to help owners keep them on the road, however it is an uphill battle."

We've clearly chosen the best of the bunch, because as Max explains concerning the diesel engine MG6, "The diesel is a serious problem as basic items like clutches and engine mounts are totally no longer available. Cars are being written off and scrapped over minor issues, and where numbers are already thin on the ground it's very hard for most companies to justify putting these parts back into production. Even front brakes for the diesels are unavailable – we do sell a kit to allow fitting of the Rover 75 brake set-up though, which has helped quite a lot."

Nowadays, an MG6 is cheap to buy second-hand. We found a handful of petrol models on *Auto Trader* for between £2000 and £2500. Our own Mike Humble wrote a buying guide on the MG6 for Parkers (**www.parkers.co.uk**) and commented that, "On paper, the MG6 is a tough one to recommend. That said, they do drive rather well thanks to a sorted chassis and strong brakes."

Under the bonnet of the petrol engine MG6, there's a 1796cc turbocharged twin-cam TCI-Tech engine which, as Chris explained, looks very similar to a Rover K-series. For instance, there's the familiar-looking black plastic spark plug cover with the words 16 VALVE TWIN CAM displayed across it. Underneath that cover, you'll not only find the spark plugs (powered by a Beru coil pack), but also the camshaft position (CMP) sensor, whereas the crankshaft position (CKP) sensor is located at the flywheel. And the oil pressure switch is attached to the oil filter housing.

The MG6's petrol engine is probably the most valuable aspect of the car. The supply of earlier K-series engines in good condition has dried up, so this is the nearest option and with the bonus of having a turbocharger. Consequently, they are becoming a popular donor for anyone with a Rover 45 or 75 or an MG ZS or ZT.

THANKS TO

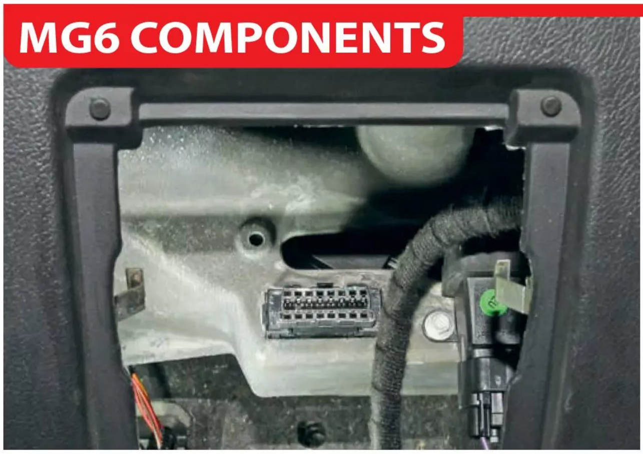
Retro Sports Cars Ltd
01484 715851
www.retrosportscars.co.uk

Diagnose Dan's Technical Support Base (TSB)
www.diagnosedan.com

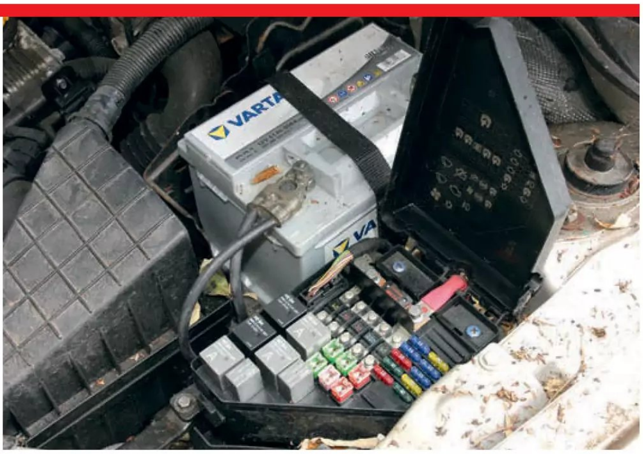
Mike Humble's buying guide
See **www.parkers.co.uk/used-cars/mg6-buying-guide**

Discount MG Rover Spares
02380 001133
www.dmgrs.co.uk

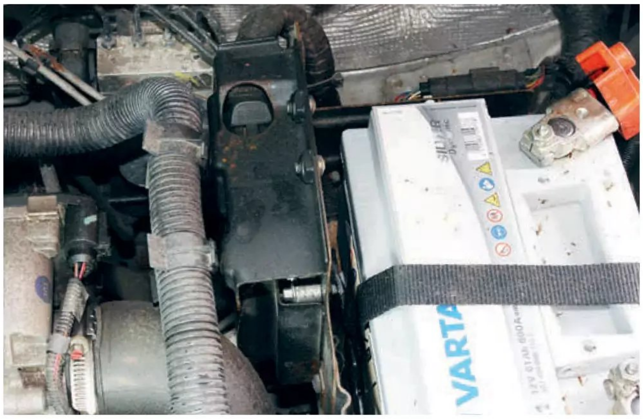
MG6 COMPONENTS



1 **The EOBD port for connecting diagnostic equipment is located behind the lower half of the dashboard on the driver's side. Look for a small storage tray on the lower part of the dashboard (below the headlight dial switch). Release it to see the EOBD port.**



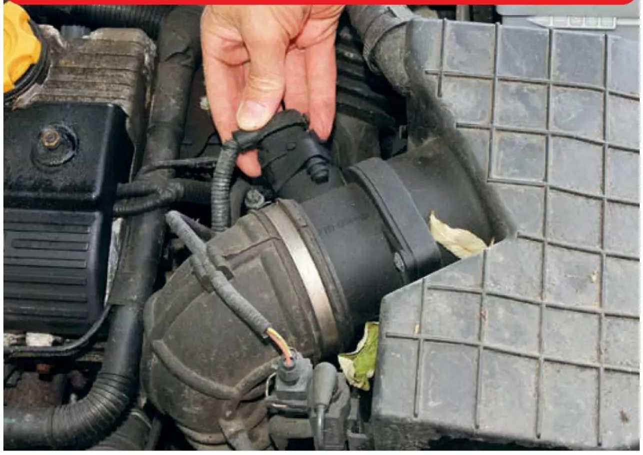
2 **The 12V vehicle battery is on the nearside of the engine bay. Connect a support pack to it to help reduce the risk of voltage drops and anomalies when diagnosing faults with the ignition switched on. A fusebox is next to the battery. Look inside for water ingress and corrosion.**



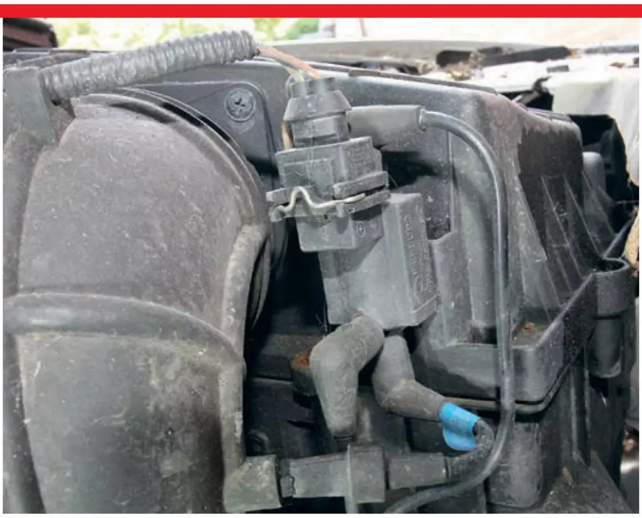
3 **The ECU is to the left of the vehicle battery (when looking from the front of the vehicle), concealed by a metal cover. Check the vehicle battery is securely fitted to avoid the risk of it moving and fouling the ECU. The one shown here is only secured with a fabric strap.**

4 **Removing the upper engine cover will help to see more of the engine sensors. It should be secured with a couple of 10mm dome nuts.**

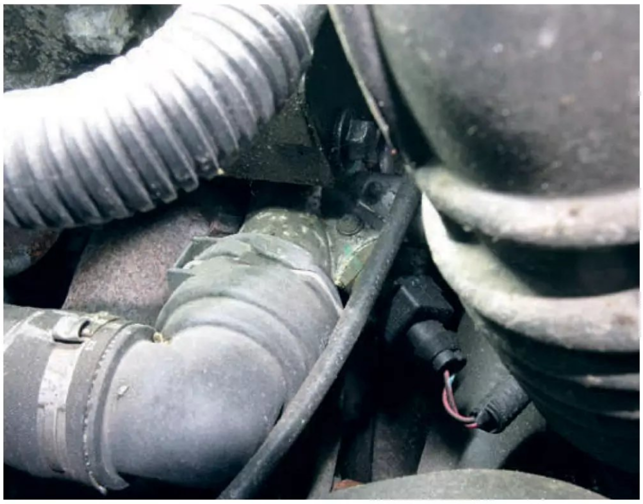
MG6 COMPONENTS CONTINUED



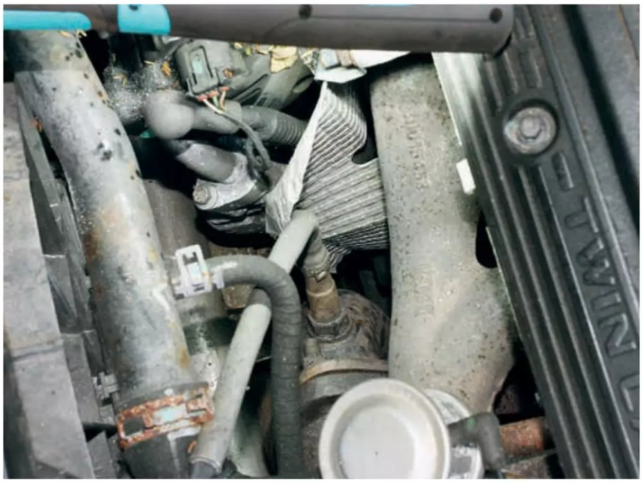
5 There's an air filter housing in the nearside front corner of the engine bay. The induction hose routed from it has a mass airflow (MAF) sensor fitted to it, which incorporates an intake air temperature (IAT) sensor.



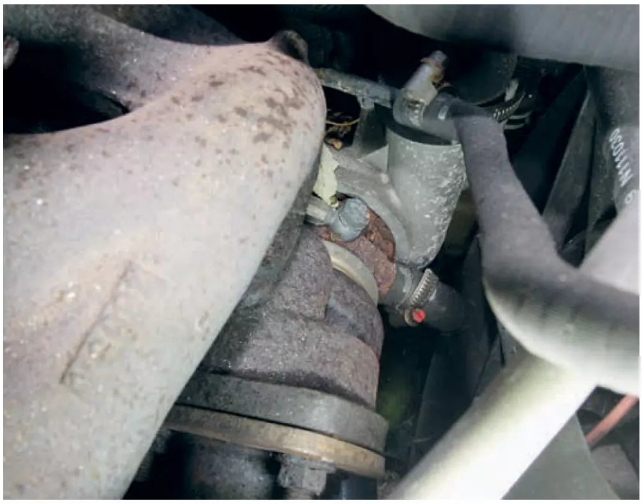
6 On the opposite side to the MAF and secured to the offside front corner of the air filter housing, there's a wastegate actuator solenoid with a selection of vacuum hoses. This controls the release of turbo boost pressure.



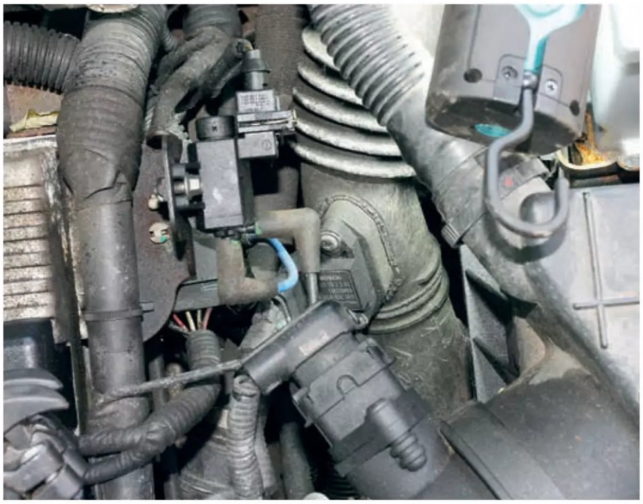
7 Underneath the air filter housing and close to the back of the engine (opposite end to the timing belt), there's a coolant temperature sensor.



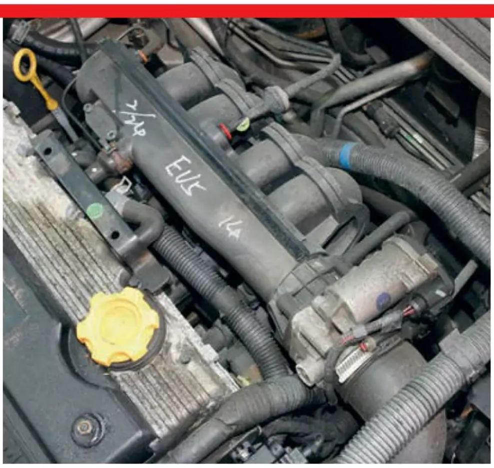
8 Looking down the front of the engine bay, there's the exhaust manifold and below it, a pre-cat oxygen sensor. The catalytic converter is below here, followed by the post-cat oxygen sensor. New oxygen sensors cost around £50 each.

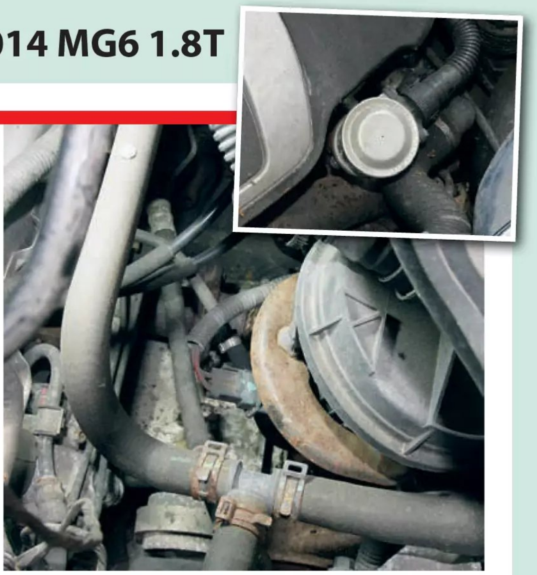


9 The turbocharger is quite difficult to see from above the front of the engine bay. It's to the right of the catalytic converter, underneath the nearside of the exhaust manifold.



10 A Bosch turbo boost pressure sensor can be seen below the MAF sensor, which is to the left of the air filter housing (when looking from the front of the engine bay).

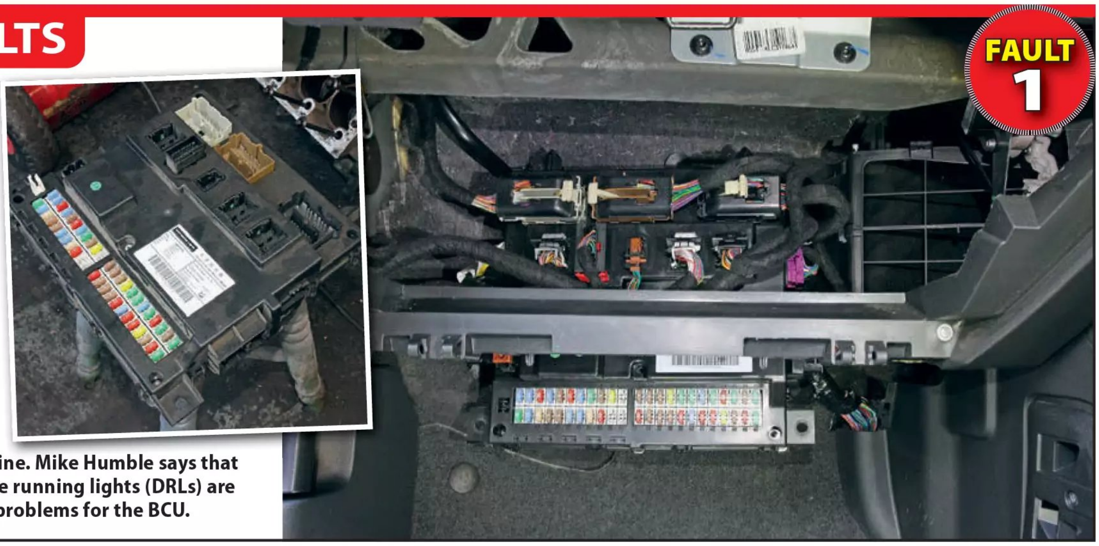




11 ◀ Across the back of the engine bay, the inlet manifold and its plenum can be seen. There's a fly-by-wire throttle body to the right of this assembly and four injectors can be seen underneath it, fitted to the cylinder-head (known as port injection).

12 ▶ Underneath the inlet manifold, there's a secondary air pump. This electric pump feeds air into the exhaust system (usually on start-up) to help dilute exhaust emissions and burn off unburnt fuel. The air feed is routed around to the front of the engine bay where there's a vacuum-operated valve (as shown here).

MG6 FAULTS



BLOWN BCU

▶ In the case of the MG6 we examined, a jump-start pack had been incorrectly fitted, resulting in the headlights not working. The problem was traced to failure of the body control unit behind the glovebox, which had been damaged when attempting to jump-start the engine. Mike Humble says that if aftermarket daytime running lights (DRLs) are fitted, this can cause problems for the BCU.

GEARBOX TROUBLE

FAULT 2

▶ Mike Humble says that clutch and gearbox issues were addressed during production but warns to be cautious with an MG6 that has a high clutch pedal, judders when setting off or struggles to select gears. A clutch kit for the 1.8 petrol costs £140 from Discount MG Rover Spares – clutch kits for diesels are not available. Mike also says that early models suffered from faulty gear position switches. This resulted in the engine not being able to start and a message appearing on the dashboard to select neutral. He says that if wiggling the gearstick clears the message, then the switch is the problem and can be accessed from within the engine bay by removing several components over the gearbox.

DODGY EARTHS

D21
12V
FAULT
3

▶ Chris at Retro Sports Cars has found that if issues concerning the ABS and traction control arise, he usually starts by inspecting any earth points before looking into wheel speed sensors. Whilst there's a main earth point for the 12V vehicle battery in the engine bay, there are several other earth points around the bodywork that should be checked. Mike Humble warns that an ABS fault can sometimes be caused by problems with the wiring around the front struts, explaining that the water sheathing around this is too short, resulting in water ingress and short circuits. A new wheel speed sensor costs around £20-£24.

REAR BUMPER WATER INGRESS

FAULT 4

▶ Mike Humble says the horn for the vehicle's alarm is located behind the rear bumper along with the parking/reversing sensors, all of which can suffer from water ingress. Discount MG Rover Spares sells plenty of rear light units, which seem to fail. This could be down to water ingress, for example.

CRUISE CONTROL FAILURE

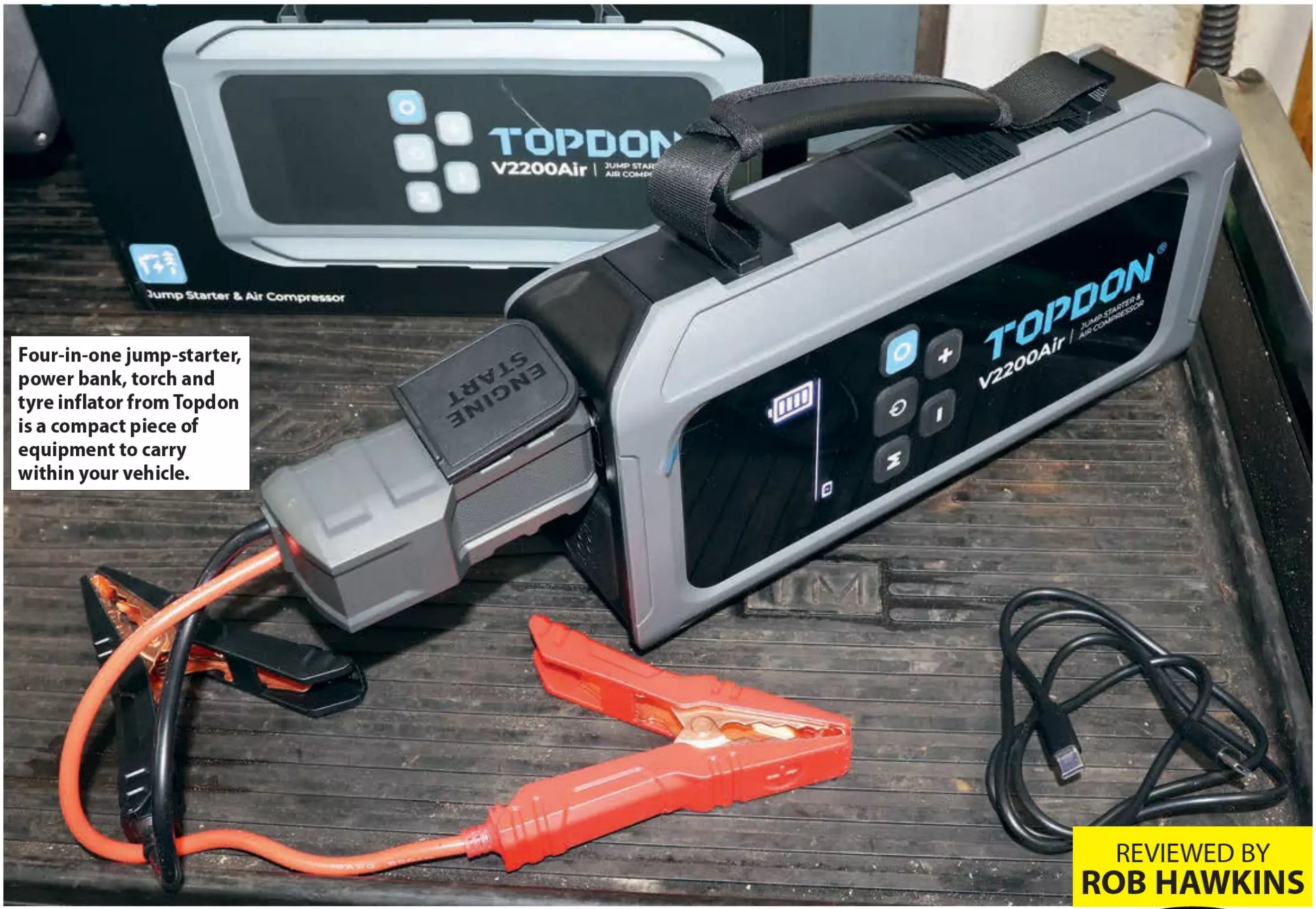
FAULT 5

▶ If the cruise control fails to operate, check the switches for the brake and clutch pedals. If these have failed, the cruise control cannot engage. Mike Humble says that later parts are a better quality and the same switch is fitted to both pedals.

Spotlight

See
www.topdon.com
for more details

***Car Mechanics* reviews equipment available to help us motorists.**



Four-in-one jump-starter, power bank, torch and tyre inflator from Topdon is a compact piece of equipment to carry within your vehicle.

REVIEWED BY
ROB HAWKINS

£140

TOPDON V2200Air JUMP-STARTER & AIR COMPRESSOR

▶ Launched in Europe and the UK in 2025, Topdon's V2200Air is a compact jump-starter with the added bonus of having an air compressor for inflating tyres. So, can it do both jobs well or should separate equipment be used? To find out, I put one in the car boot to help maintain its tyre pressures and, despite the vehicle battery didn't need a boost, I soon found one that did.

Powered by four on-board 3.7V 12Ah lithium-ion batteries, Topdon says it's capable of starting a 12V lead-acid battery for a petrol engine up to a capacity of 8-litre, and a diesel of up to 6-litre – and in under two seconds! Sounds impressive, although all the jump-starters I have tested boast similar figures for engine sizes (not time), but whilst the size of an engine is one factor, its compression ratio and hence the effort required to rotate its crankshaft could be a limiting factor, which may make that claim of two seconds seem a little bold.

However, I liked the intelligence of this jump-starter when connecting to a vehicle battery to help start an engine. After connecting the supplied clamps to a battery, a green light is illuminated to indicate an attempt to start the engine can be made (turn the ignition key). If the green light doesn't illuminate, then the voltage of the vehicle battery may be too low (assuming the jump-starter is fully charged), but all is not lost. This jump-starter has a boost function, which is a short, sharp blast of power. Topdon's literature states that if a battery is below 3V, then the boost mode may help, but it only lasts for 30 seconds because the maximum current produced under boost mode is a whopping 2200A. Topdon's literature states that the V2200Air can only be used to help jump-start vehicles with a lead-acid battery, which includes AGM and gel types – and most petrol or diesel engine vehicles with a Stop-Start system.

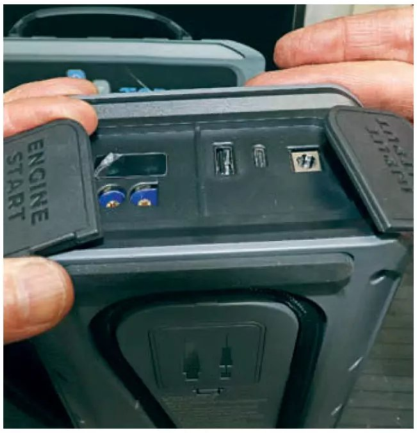
I used the V2200Air to help jump-start my Mazda MX-5's engine, where the voltage of the battery in the boot had dropped to 11.76V. It wasn't particularly low but wasn't sufficient to turn the engine and fire it into life after not being run for several weeks.

With a voltmeter attached to the battery and then the end of the live feed cable, I noticed that after connecting the V2200Air to the battery terminals, the voltage readings shot up to over 14V. Within less than a minute, the readings had dropped to around 12.5V. I'd not used the aforementioned boost setting, so can only assume that the initial connection provided the extra voltage to help with starting the engine. I repeated this and tried to start the engine with 14V, and after a few healthy-sounding turns of the engine, it fired into life.

Tyre inflator hose with quick-release end is permanently connected to the V2200Air and tucked into the underside.

It took a reasonably impressive 47 seconds to inflate a tyre by 5psi.

Jump-starting Rob's MX-5 where the vehicle battery needed a boost, saw it rise to 14V after initially connecting the V2200Air. A twist of the ignition key fired the engine to life.



Ports on the side of the V2200Air look obvious, but only the USB-A and round port are for recharging another device, whereas the USB-C is for recharging the on-board battery.

As a power bank, recharging equipment, such as this Sealey worklight, took around a couple of hours.

Ports

There are three input/output ports under a detachable rubber cover, comprising a USB-C, an older USB-A and also a 10A DC (direct current) round socket. The USB-A port and the round socket are suitable for recharging other equipment, such as a torch or mobile phone, whereas the USB-C is for recharging the V2200Air's on-board battery.

A USB-C to USB-C lead is included, which requires an adaptor plug to use it with mains electricity to recharge the on-board battery (unless you have a wall socket with a USB-C socket). The accompanying literature recommends the V2200Air's on-board battery should be recharged every six months. A battery indicator with four lines shows the state of charge.

The on-board battery can be used as a power bank for recharging a range of equipment, from an inspection torch and mobile phone to a worklight. It can also fast charge, which is applicable to some mobile phones, for instance, that can be recharged in 30 minutes. I managed to recharge my worklights, which in some cases took around a couple of hours. Throughout recharging, the battery status remains displayed on the V2200Air, which helps to show it's working.

Inflating

The on-board air compressor can inflate everything from a football to a bicycle, motorbike and car tyre. Whilst pressing the M-labelled button on the unit switches between the different inflation functions (and change between pressure units of psi, bar and kpa if held down for more than 1.5 seconds), I found I could simply attach the quick-release hose connector to a tyre valve, and a pressure reading was instantly displayed. After adjusting the target pressure using the plus and minus buttons, a single press of the blue-coloured button switched on the compressor and began inflation. As with all tyre inflators that have a target pressure, this one switches off automatically, but it usefully overinflates by roughly 1psi, allowing for a little air loss when detaching the connector.

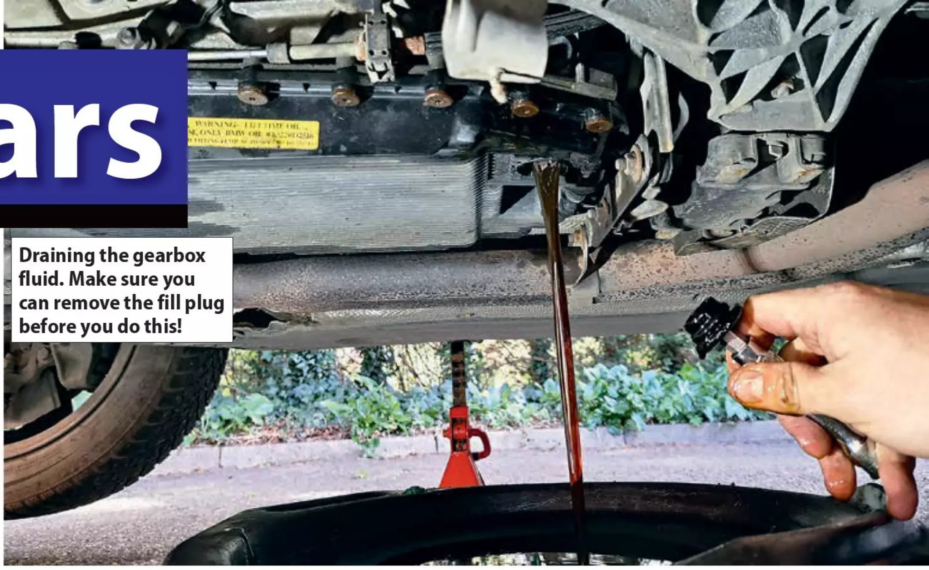
I was really impressed with the tyre inflator for two reasons. Firstly, the pressure readings were accurate – I have a calibrated PCL digital tyre pressure gauge and at 25psi, the V2200Air read the same value. Secondly, the speed of inflation is good, taking a mere 47 seconds to inflate a tyre from 25psi to 30psi. Looking back at our group test of tyre inflators in the January 2025 issue, it's comparative to the two similar products (jump-starter and inflator) from Draper (product code 23722) and Sealey (RS1200TI) in terms of speed of inflation, price (both are a little cheaper) and additional features.

Talking of additional features, one that's potentially useful on this V2200Air is an LED torch. It's switched on by holding down the on/off power button for three seconds, after which the main torch illuminates. Pressing the on/off power button again switches between the different lighting modes, which includes a red light. Confusingly, if you want to switch off the V2200Air, holding down the on/off power button for seven seconds does the job, but that will mean the LED light is momentarily switched on. Once I knew this, it wasn't a problem.

There's no means of storage included with the V2200Air, so whilst the inflator hose is neatly tucked into the back of the unit and there's a small access panel for inflation accessories, there's nowhere to put the jump-start cable. This plugs into the side of the V2200Air but shouldn't be left connected to it, so it must be left loose. It's not an issue if everything is stored in a glovebox.

In conclusion, Topdon's V2200Air is a useful and accurate jump-starter, power bank, torch and tyre inflator to carry on board a vehicle and it's more compact than having four separate pieces of equipment.

Our Cars



Draining the gearbox fluid. Make sure you can remove the fill plug before you do this!

Jake Belder

Special Contributor

E60 road trip prep

When you think about preparing your car for a road trip, you probably don't imagine laying underneath said vehicle ten days before you're meant to leave, with the gearbox half apart.

Neither did I, but that is precisely where I found myself. The ZF-6HP19 gearbox in my 2004 BMW 530i had, for some time, displayed the classic symptoms of worn valve body seals: sluggish shifts, a hesitance to downshift, and occasional flaring between the higher gears. It had been on my mind to address this at some point, but since I had to be underneath the car anyway to change the oil, I figured now was the time to get into the gearbox as well. As you do.

Gearbox seals and service

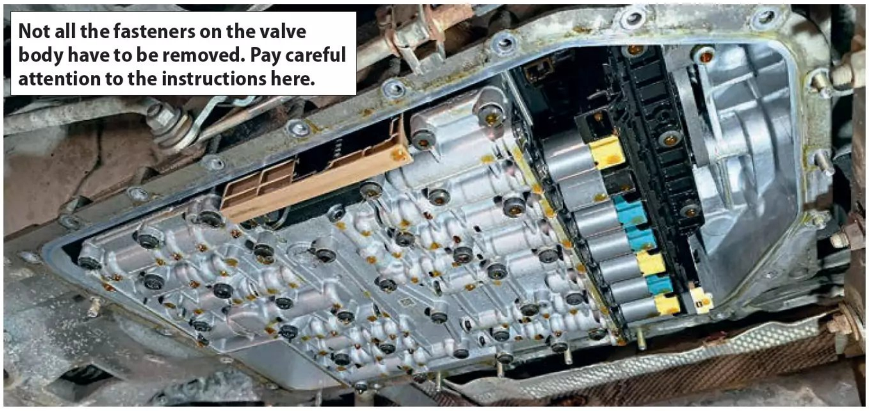
A new febi sump pan and all the ZF-equivalent fluid I would need for the job was here, and with the seals and Mechantronic sleeve I'd already acquired directly from ZF, I dug in. The first step, naturally, was to drain the gearbox pan. With that done, I started to undo the sump pan fasteners. To no one's surprise, very few of these came off easily, and half of them required drilling out the heads. Thankfully, this was simple – when I drilled through the head, it simply popped off, leaving a good amount of stud sticking out of the gearbox casing. I was then able to grip these with some pliers, and they spun out easily.

With the pan off, it was time to drop the valve body. To do this, the Mechantronic sleeve first needed to be removed. To do this, I pulled down on a clip on the underside of the valve body to release the sleeve, and then you had to get a pry bar onto the sleeve and start working it out. This was tricky, partly because there was not a lot of room to work, and partly because it was wedged tightly into the side of the gearbox. Once it came out, the valve body fasteners were removed (you can easily find official ZF instructions for this whole process online) and I carefully set the valve body aside.

At this point, replacing the seals was very easy. Over time, with all the heat cycles, these seals harden up and compress, losing their ability to seal properly. You can see in the adjoining images how much the main bridge seal has compressed over time, as well as how much the new sleeve seal sticks out of the gearbox, compared to the old ones which are flush with the casing. These sleeve seals pulled out easily with a pair of needle-nose pliers, and to replace them, I simply lubed them with a bit of gearbox oil and pressed them into place. The valve body then went back into the gearbox and was secured and re-torqued in a particular pattern, following the ZF instructions.

Next came the new Mechatronic sleeve, and this I found, by far, to be the hardest part of the job. Getting the sleeve properly seated took a lot of effort and careful work with a pry bar. But that didn't even begin to compare with how difficult it was to line up and plug in the TCM connector. With so little room to work, it felt nearly impossible to get my hand into the right position, and all the time I was dreading accidentally touching the pins, which can destroy your TCM. After a couple hours of trying, I got so frustrated that I had to walk away for a while. I came back outside after dinner, took a deep breath, and finally got it lined up and secured.

I oiled up the O-ring on the new pan's filter and raised it into place. Ideally febi's pan kit contained all the new fasteners I needed (these are upgraded from T27 to T40 Torx fasteners, which are much more robust), as well as a new fill plug. Again, all the fasteners needed to be torqued in a specific pattern. With everything sealed up, it was time to



Not all the fasteners on the valve body have to be removed. Pay careful attention to the instructions here.

The Mechatronic sleeve is not easy to get to, hidden on the back of the gearbox between the gearbox and exhaust mounts.

More than 48,000 different spare parts in OE matching quality
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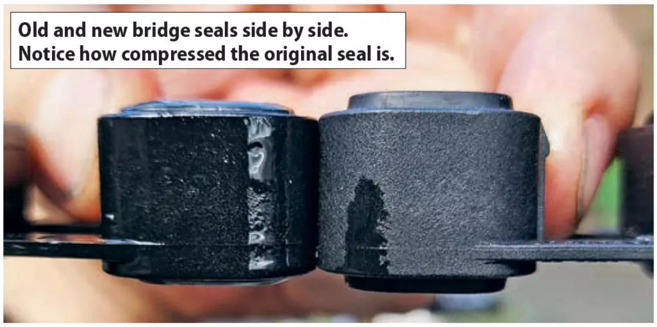
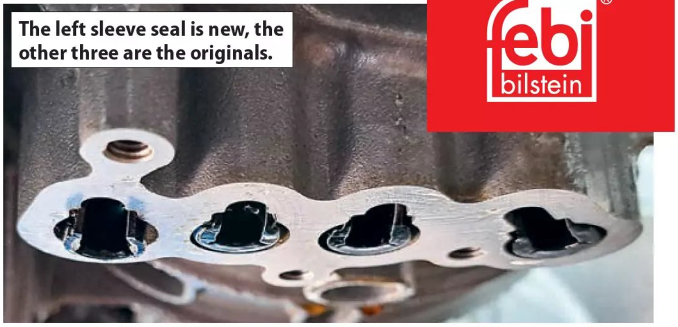

Old and new bridge seals side by side. Notice how compressed the original seal is.


The left sleeve seal is new, the other three are the originals.

refill the gearbox. This involved making sure the car was level and watching the gearbox temperature. Once the temperature was around 40°C, and the oil began to run out of the fill plug hole, I knew the level was correct.

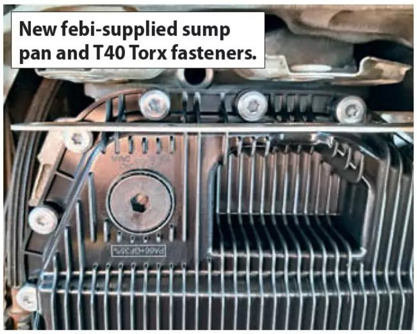
Cooling and oil leaks

The other preparatory items for my road trip were much simpler. The thermostat housing had been weeping slightly for a while, so I got a new one from febi, along with a water pump. After taking things apart, I discovered the reason for the leak was due to someone previously using RTV sealant around the housing. The water pump had seen similar treatment. This is entirely unnecessary on these M54s; the supplied rubber gaskets mounted to a clean surface provide all the sealing you need.

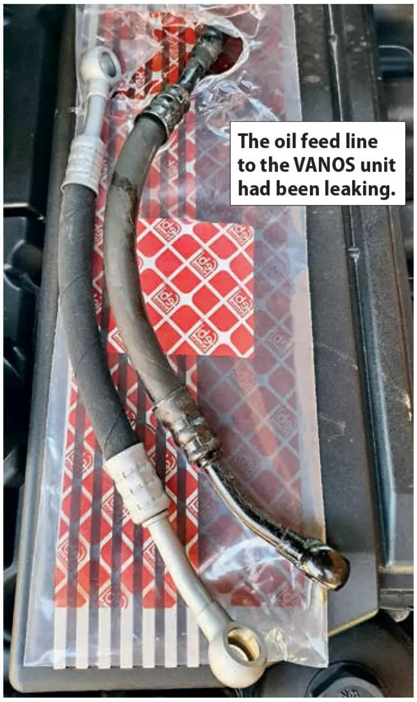
After scraping off the old RTV and cleaning up the mating surfaces on the block, the new thermostat, housing, and water pump were installed. Hoses reconnected; I refilled the cooling system and started the engine. This is a self-bleeding system, so I watched the expansion tank, and when coolant started coming back through the return line, I put the cap on and let it get up to temperature. When it was cooled down again, it only required a small top-up to get the level right.

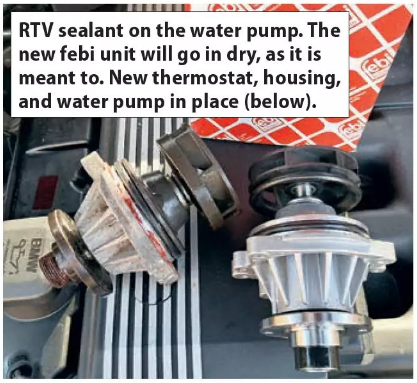
Finally, what's a BMW without an oil leak? The feed line to my VANOS unit was leaking slightly, so febi supplied one of those too. Two 19mm banjo bolts secured the feed line, and with new crush washers in place, the leak was taken care of.

As for the road trip, it was a success, and a good reminder of why I like a big saloon so much. We did 1900 comfortable and fault-free miles through France, Belgium, the Netherlands. And yes, we briefly crossed over into Germany to hit the autobahn and let the 5-series stretch its legs on its home turf. The only question now is, where to next?


New febi-supplied sump pan and T40 Torx fasteners.

Febi supplied a good quantity of ZF-equivalent fluid (p/n 34608).


The oil feed line to the VANOS unit had been leaking.


RTV sealant on the water pump. The new febi unit will go in dry, as it is meant to. New thermostat, housing, and water pump in place (below).

Another comfortable and fault-free European road trip!

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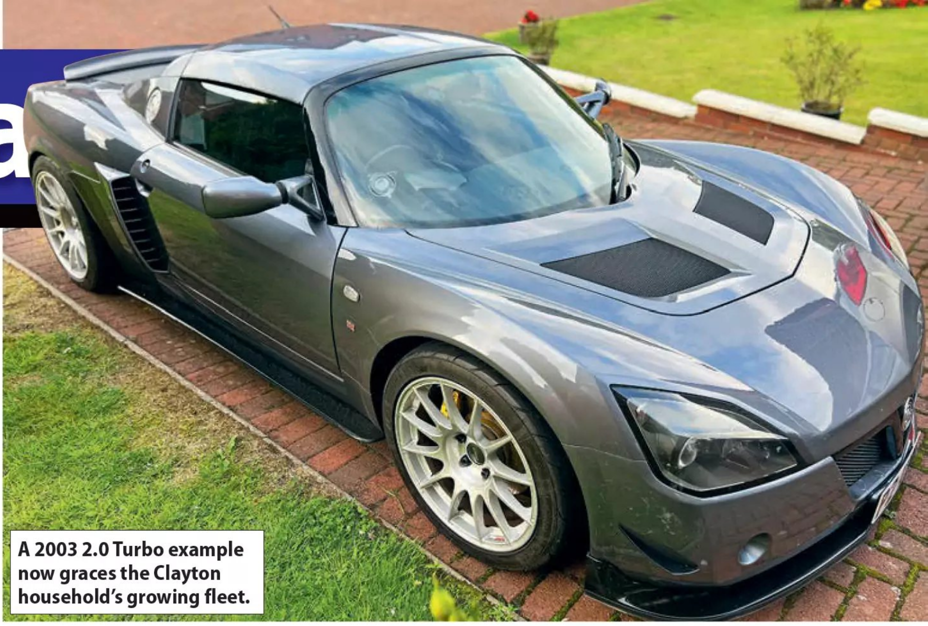
Our Ca

Peter Clayton
Special Contributor

VX220 dream



A 2003 2.0 Turbo example now graces the Clayton household's growing fleet.

Some twenty-two years ago, when riding along in my 1995 Rover Mini Cooper in gleaming British Racing Green (and obligatory Union Jack vinyl roof) I knew fully well that this machine bent the rules and ruled the bends, so when I glimpsed a new contender in my rear-view mirror I didn't flinch. The upcoming roundabout prompted a cog change into second, and the 1275cc SPi engine roared into life, before I chucked it around effortlessly, leaving this other car behind. So I thought. I stopped short of having a good giggle, staring into the rear-view, this silver bullet dominated the roundabout with surprising gusto, oversteering slightly but well controlled, before exploding out of the exit and overtaking me in one streaky blur. It was gone, like I was standing still.

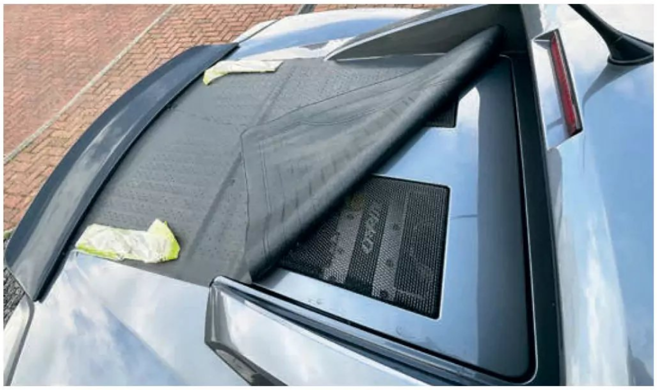
That was the first time I laid eyes on a Vauxhall VX220 up close and personal. Picking up my teenage jaw from the footwell, I drove home mesmerised by this epic event. It's not the typical thing you would associate with Vauxhall. Bonded aluminium tub, glass-reinforced plastic (GRP) body, mid-engined, two-seater convertible...? This was the love child of Lotus and General Motors, during a time when the former were strapped for cash attempting to meet new safety regulations – and the latter were looking for a new roadster. A deal was struck, and the Hethel Lotus factory had the funds to build their new Elise S2 right alongside the VX220 in both European left-hand-drive Opel (known as the Speedster) and the home-brew right-hand-drive Vauxhall forms.

Sadly, only around 7200 VX220s were manufactured during 2000 to 2005, quite a bit short of what GM were hoping for.

Now or never

Having recently reviewed my home fleet, I knew something was missing. The VX220 seemed like the now or never type of car to get – at the very least to fulfil the wonders of my youth before age, or specifically my lower back, got the better of me. My first port of call was research. The **VX220.org.uk** forum was a treasure trove of information, and even included a first-time buyers' check list. The forum also allowed me to find a very nice VX220 owner local to me so I could pop down and see what one was like in person. And whether I could fit in it (the answer was 'just about').

Over the next seven months, with the green light from Mrs. C, I checked the classifieds and Facebook groups regularly. The two engines that GM made for the VX220 were a naturally-aspirated 2.2 all-aluminium block (147hp) or the later 2.0 Turbo iron-block (200hp). I heard that while the 2.2 was still fun, you had to work it hard and would therefore spend most of its life in third gear. Many owners of these decided to rightfully modify it with an Eaton M62 supercharger lifted from the Saturn Ion Redline (a model only available in the US market). This, with the help of a remap, achieved a very healthy 250 horsepower. The other option, being the Turbo, meant a remap and a tweak would see around the same power output. The debates on whether supercharging or the turbo were the way to go filled many a page on the VX220 forum. It seemed the 'charger was better for the track enthusiast, whereas



Mid-engined with vents in the engine 'bonnet', rainwater can find its way to the coil pack that sits right on top of the engine, so an aftermarket rubber cover was purchased.

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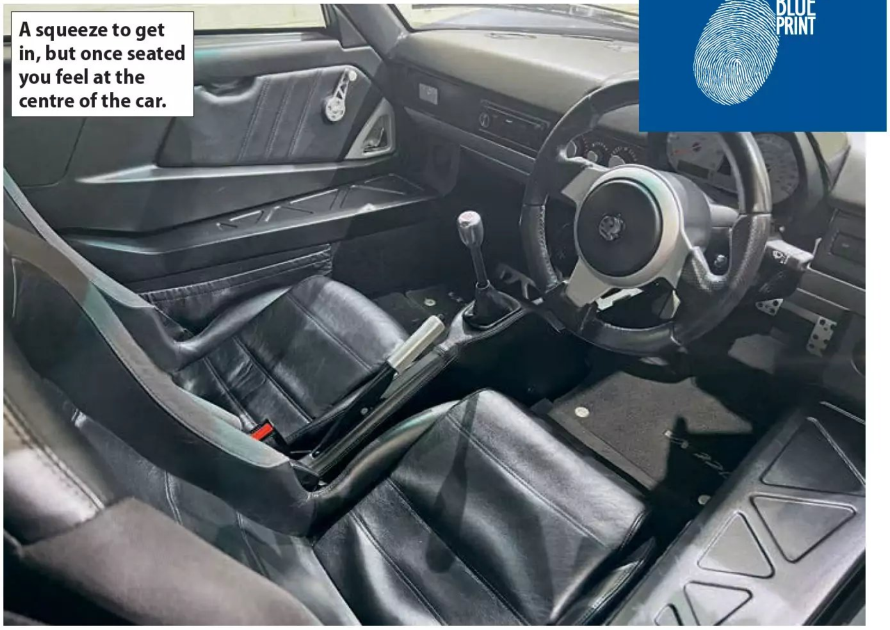
the turbo would be more fun on the road. I decided I didn't mind!

Bite the Bullet

A rather shiny Turbo example in Moonland Grey came up for sale one day on the VX220 Owners Facebook Group. This colour, despite only making up around 1% of all VX220s produced, was seemingly very popular with the members. It had been modified, which I am usually extremely cautious of, but after learning more about its history I relaxed as it didn't look to be an abused example. Much of its early life avoided the British weather entirely, having been owned by a doctor who took it with him to Cyprus. The seven previous keepers seemed to have owned it for between three and four years, with plenty of receipts or stamps to back everything up. In its 22-year life it had covered just 24,000 miles with no recorded damage and no MOT fails! The engine bay and interior were like new. It came with both hard-top and soft-top, upgraded interior, front and side splitters with rear diffuser and carbon wing, fully serviced, new suspension, brake discs and pads and an upgraded hybrid turbocharger that was safely remapped to 270 horsepower. This commanded the higher end of the VX220 price range. High milers registered as a Cat-D can be picked up for around £8000, whereas mint examples advertise closer to £22,000. Still, a bargain considering in 2004 the basic 2.0 Turbo model retailed at £26,495 on the road, which is over £48,000 adjusted for inflation in today's money.

The four-hour drive from Scotland to Warrington, where the car was located, was worth the journey down. Simon, the owner, had clearly looked after the car fastidiously. Always garaged, never used in the wet, and detailed to within an inch of its life. A paint defect, common on GRP, where it lifts from the substrate causing a bubbling effect ('osmosis' in common parlance of VX220 owners) was not to be seen anywhere on the body and had allegedly been the original paint. Other checks, such as seeing no smoke on a cold startup, ensuring the cooling fan kicked in at around 97°C and no cracks on the GRP sills all passed with flying colours. Simon had even fixed some of the known rattles that plagued the car from the factory, and with the adjusted suspension, the test drive was actually more of a comfortable ride than I had anticipated.

Then there was the performance. I let Simon drive first. Once out on the bigger roads, the engine was allowed to stretch its legs. The acceleration on this sub-one-tonne go-kart was vomit-inducing but exhilarating nevertheless! Simon reassured me that I'd get used to that. My test drive then came, and noticed a little play in the steering, but with no power assistance it took some getting used to. Other than the slight play, and potentially a small whiff of coolant from the radiator (in the middle of a hot summer) I could not fault the car in the slightest. Around three hours of examination had been undertaken by this point, with the help of my VX220 check list. Money was exchanged, and in return I became the next custodian. Simon also threw in the original 17in Snowflake alloy wheels and all the parts that came with the car that he had upgraded, including the original suspension, turbocharger and even a CTEK trickle charger!



A squeeze to get in, but once seated you feel at the centre of the car.

The expansion tank suffers from UV exposure, cracking the plastic – febi offer these in their catalogue, however this was recently replaced.

The VX220 never came with a pollen filter – this aluminium tubing feeds unfiltered air directly into the cabin!

Living with a VX220

A week into ownership of 'Bullet' had given me some time to get used to the car, such as taking nearly ten times longer than normal to get in and out of the seat! With no air-conditioning you either have the roof off or windows down as the standard fans are a little on the weak side. Luckily a 12-volt fan had been retrofitted under the dashboard to alleviate those troubles!

Will servicing be a problem? When checking on the febi parts catalogue, **https://partsfinder.bilsteingroup.com**, the VX220 is listed with a good range of OEM quality parts, no doubt helped by the fact that many of the underpinnings are from other models of Vauxhall! Stay tuned for how I get on…

Search more than 62,000 different articles.
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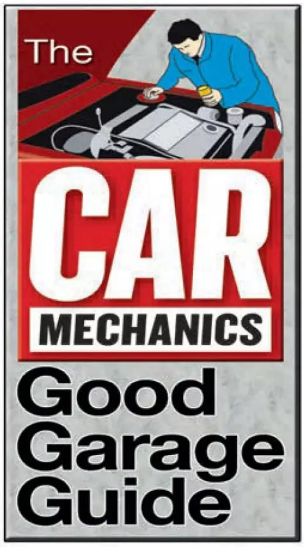

The CAR MECHANICS Good Garage Guide

This listing is published every **THREE** months and will next appear in our **February 2026** issue. We welcome further nominations (from satisfied customers only please, no self-nominations) of businesses to be included, so that we can make this listing as useful as possible to readers throughout Britain and Ireland.
Please write to:
***Car Mechanics* Good Garage Guide, Kelsey Media, The Granary, Yalding Hill, Yalding, Kent ME18 6AL.** Or email: **martyn.knowles@kelsey.co.uk**

AVON

Lockleaze Service Station, Lockleaze Road, Bristol BS7 9RU.

BERKSHIRE

Mike Farina Auto Services, 21 Sedgewell Road, Sonning Common, nr Reading, Berks RG4 9TA. Tel: 0118 972 4036. *Servicing, repairs.*

BUCKINGHAMSHIRE

Stokenchurch Service Centre, Wycombe Rd, Stokenchurch, Bucks HP14 3RR. Tel: 01494 483355. *Servicing, repairs, tuning, MOTs, welding, exhausts, batteries.*

M D Autocare, 54/55 Rabans Close, Aylesbury, Buckinghamshire HP19 8RS. **www.md-autocare.co.uk**

CAMBRIDGESHIRE

D.L.M. Autos, 63a Orchard Road, Great Shelford, Cambs CB22 5AA. *MOTs, servicing/repairs on modern & older cars.*

G Nice and Sons Ltd, 3 Chapel Street, Waterbeach, Cambs CB25 9HR. Tel: 01223 860241. *Isuzu specialist, MOT testing, aircon specialists.*

Kings of Witcham, The Slade, Witcham, nr Ely, Cambs CB6 2LA. Tel: 01353 778403, email: info@kingsofwitcham.co.uk. *Independent Volvo specialist since 1996.*

Saabmaster Garage Services, Unit 7, Robert Davies Court, Nuffield Road, Cambridge CB4 1TP. Tel: 01223 420055. *Independent Saab specialists.*

Swift Car Care, 145-147 St Pauls Road, Peterborough. Tel: 01733 897080.

VW Technics, Unit 10, Highgate Farm, Over Road, Willingham, Cambridge CB24 5EU. **vwspecialistcambridge.co.uk**

CHESHIRE

Andy Stockton Autocare Ltd, Unit 26, Heron Business Park, Tan House Lane, Widnes WA8 0SW. Tel: 0151 420 2838. **asautocare.co.uk** *Vauxhall specialist.*

CLEVELAND

Ron Payne & Son, Baltic Street, Hartlepool TS25 1PS. Tel: 01429 273646.

CORNWALL

Dale Brett Autos, Gilston Road, Saltash, Cornwall PL12 6TW. Tel: 01752 849448. *Family owned and run. 10/10 everytime.*

Ferris Garage Ltd, Truro TR3 6RE. Tel: 01872 862218.

M Clark Motors, Polperro Road, West Looe PL13 2QP. Tel: 01503 265511. *MOTs, servicing, welding, tracking, bodywork, exhausts, batteries.*

CUMBRIA

Cleator Moor Auto & Body Repairs Ltd, Ennerdale Road, Cleator Moor, Cumbria, CA25 5LD. Tel: 01946 811800. *Service is brilliant and the mechanics very knowledgeable.*

Riverside Garage, Holmrook, Cumbria CA19 1UH. Tel: 01946 724228. *Friendly helpful and professional service.*

Wheatsheaf Garage, Low Road, Brigham, Cockermouth CA13 0XH. Tel: 01900 825946. *Excellent service. Classics welcome, especially Minor & MGB.*

DERBYSHIRE

The Service Garage Ltd, Engineering Services, 51 Derby Road, Borrowash, Derby DE72 3HA. Tel: 01332 663982 or 677131.

Walgrove Garage Ltd, Walgrove Road, Brampton, Chesterfield, Derbyshire S40 2DS. Tel: 01246 278181. *French & VAG specialists. MOTs, tyres and welding.*

Walkers Motors Servicing & Repairs, 9 Platt Street, Padfield, Glossop SK13 1EB.

DEVON

Racecourse Garage, Babbage Road, Totnes Industrial Estate, Totnes, Devon TQ9 5JA. Tel: 01803 862297. *Offers excellent service and competitive rates.*

Tuned Auto Repairs, Newcourt Barton, Clyst Road, Topsham, Exeter EX3 0DB. *Excellent customer service at cheap rates.*

DURHAM

Skipbridge Garage, Hurworth Moor, Darlington, County Durham DL2 1QL. Tel: 01325 720498.

ESSEX

Bennetts BMW Specialists, Unit 1, Haltgate House, Hullbridge Road, South Woodham Ferrers, Chelmsford, Essex CM3 5NG. Tel: 01245 328601, **www.bennettsbmw.co.uk** *BMW specialists, also all-makes repairs.*

The Bodyshop, 31-37 Tomswood Hill, Barkingside, Essex IG6 2HL. Tel: 020 8500 9228 **bodyshop.uk.com**

D & A Autos, Unit 1A, Pools Lane, Highwood, Chelmsford, Essex CM1 3QL. Tel: 01245 248317.

Frank Shaikley and Sons, Hawkins Road, The Hythe, Colchester, Essex CO2 8JY. Tel: 01206 796657.

Halfway Garage, behind Frinton Gate Motors, Colchester Road, Tendring, Essex CO16 9AA. Tel: 01255 831285. *Service, repairs, MOTs incl motorbikes.*

Motorvation 2000, Unit 13 Stondon Road, Hallsford Bridge Industrial Estate, Ongar, Essex CM5 9RB. Tel: 01277 364241. *Engine rebuilds, MOT, servicing, electrics.*

Oakdene Autos, Cranes Close Basildon, Essex SS14 3JB. Tel: 01268 520537. **www.oakdeneautos.co.uk** *Bodywork, welding, MOT & servicing work.*

Pristine Bodyworks/RR Automotive, Scaldhurst Farm, Larkhill Road, Ashington, Essex SS4 3RU. Tel: 01702 257177. *Family run – one brother handles mechanical work, the other bodywork.*

GLOUCESTERSHIRE

Stonehouse Exhaust, Unit 1, Orchard Place, Stonehouse, Gloucestershire. Tel: 01453 822971. *Excellent garage. Good old-fashioned service!*

HAMPSHIRE

Keylink Systems Ltd, 15/16 The Calvert Centre, Woodmancott, Winchester SO21 3BN. Tel: 01256 379150. *Mercedes/BMW specialists but will take care of anything.*

SJB Autotech, Unit 3, Beresford Centre, Wade Road, Basingstoke RG24 8FA. Tel: 01256 477 411. **sjbautotech.co.uk** *Jim, the owner, is extremely experienced with the VAG range.*

Mendem Motors Ltd, Unit 4, Stacey Industrial Park, Silchester Road, Tadley RG26 3PY. Tel: 0118 970 2222. **mendemmotors.co.uk**

Wes & Co, Shootash Garage, Salisbury Road, Romsey, Hants SO51 6GA. Tel: 01794 515003. *MOT station, servicing.*

HEREFORDSHIRE

DC Rogers Auto Repairs, Unit 11, Beech Business Park, Tillington Road, Hereford HR4 9QJ. Tel: 01432 264200.

HERTFORDSHIRE

Broxbourne MOT and Motorist, Unit 1, Bridge Works, Nazing New Road, Broxbourne, Herts EN10 6SG.

KENT

Bexley Lane Garage, 33-47 Bexley Lane, Crayford DA1 4DD. Tel: 01322 527279 **bexleylanegarage.co.uk** *Lockheed Authorised Brake Safety Centre, MOTs, servicing.*

Chelsfield Motor Works, Court Lodge Farm, Warren Road, Orpington BR6 6ER. Tel: 01689 890689. *Mechanical repairs, MOTs, bodywork, aircon, diagnostics.*

Hartley Garage Services Ltd, Ash Road, Longfield DA3 8EL. Tel: 01474 706501. *All usual garage services plus MOTs/aircon.*

Ivydene Garage Ltd, Unit 99, Ellingham Way, Ellingham Ind. Est., Ashford TN23 6LZ. Tel: 01233 636081. *Mechanical repairs, servicing all makes, MOTs, aircon, Bosch diagnostics.*

LANCASHIRE

Mick's Garage, Unit 2A Old Station Yard, Kirkby Lonsdale LA6 2HP. Tel: 01524 237785. **https://micksgarage-ap.co.uk** *Proprietor Mick Gudgeon is a time-served MB tech but also works on all other makes. MOT station up to Class 7 with a 6.5m bay.*

LEICESTERSHIRE & RUTLAND

Broad Street Garage, The Old Forge, Brook St, Enderby, Leicester LE19 4ND. Tel: 0116 286 1416.

L&H Exhausts MOT & Service Centre, 4 Charlotte Street, Melton Mowbray, Leics LE13 1NA. Tel: 01664 562684. **lhexhaustsmotcentre.co.uk** *Very good independent garage.*

Tarsel Motors Ltd, 173 Church Hill Road, Thurmaston, Leicester LE4 8DH. Tel: 0116 693333.

J. T. Tilley and Son, 3 Lutterworth Road, Burbage, Hinckley, Leics LE10 2DJ. Tel: 01455 239303.

LINCOLNSHIRE

Corten Miller Performance Centre, Friskney Eaudykes, Skegness, Lincs. *Very knowledgeable highly-skilled staff.*

Derek Chapman Motor Services, 13 High Street, Alford, Lincolnshire. Tel: 01507 462571. *An excellent and friendly garage and bodyshop.*

G Harniess (Louth) Ltd, Bolingbroke Road, Fairfield Industrial Estate, Louth LN11 0WA. Tel: 01507 603341. **gharniess-louth.co.uk**

Huttoft Service Station, Mumby Road, Huttoft, Lincs LN13 9RF. Tel: 01507 490283. *Village garage with all usual repair facilities plus LPG stockists.*

W H Brand and Son, Whaplode Drove, nr Spalding, Lincs. Tel: 01406 330265. *Daewoo/Chevrolet franchise and independent MG Rover specialists.*

LONDON (GREATER)

Barnet Service & Tuning Centre, 1 Motor Way, Margaret Road, New Barnet, Herts EN4 8DW. Tel: 020 8441 6667. **www.scimitarmotorservices.co.uk** *All usual garage services plus MOT testing.*

MANCHESTER (GREATER)

Phoenix Close Honda, Unit 208 Phoenix Close Industrial Estate, Heywood OL10 2JG. Tel: 01706 366500. *Proprietor Chris assisted by Phil are both Honda trained. Mechanical & diagnostic work. Wouldn't take our CR-V anywhere else.*

MERSEYSIDE

Sarbkar NW Ltd., Unit 1, Woodend Avenue, Woodend Industrial Estate, Speke, Liverpool L24 9NB. **sarbkar.co.uk** *Great service and great customer service.*

Village Auto Repairs, 6a Greenes Road, Whiston, Prescot, Merseyside L35 3RF. Tel: 0151 426 0999. *Servicing and repair of cars & light commercials. Also a Class 4 MOT testing.*

NORFOLK

Bragg of Briston, 23A Fakenham Road, Briston, Melton Constable, Norfolk NR24 2HL. Tel 01263 860554. *Peugeot/Citroën specialist but now covering all makes.*

Herring and Palmer, Hewett Yard, Hall Road, Norwich. Tel: 01603 666585. *BMW specialists, all makes catered for.*

Threeways Garage, Watton Rd, Shipham, Norfolk IP25 7PE. Tel: 01362 820430. *Independent Citroën specialist, also repairs/services other makes. MOTs.*

S & R Motors, Sunset Lodge Industrial Units, St. Germans, Kings Lynn. Tel: 01553 617696 or 07788 268121. *Run by Steve Smith. Service is excellent.*

Stone Chips Ltd, 12 Garden Street, Norwich NR1 1QU. *Minor paintwork repairs, bumpers, etc. Valeting, interior repairs, alloy refurbishment.*

NORTHAMPTONSHIRE

Rob Price Automotive Services, 146 Northampton Road, Broughton, Kettering, Northants NN14 1NS. Tel: 01536 790901.

NORTHUMBERLAND

JT Auto Services, The Old Works, Red Row, Morpeth, Northumberland NE61 5AU. Tel: 01670 761711. *Repairs, servicing.*

NOTTS

PVS (Professional Vehicle Servicing), Glaisdale Drive, Nottingham NG8 4GY. Tel: 0115 928 3333. *Repairs, servicing, reasonable prices, helpful staff.*

Wright Engineering Co Ltd, 332 Colwick Road, Nottingham NG2 4BG. Tel: 0115 950 2284. **wright-engineers.co.uk** *Automotive services including milling, turning, grinding, and fabricating.*

OXFORDSHIRE

Oxford Autogas, Tiddington Garage, Oxford Road, Tiddington. Oxon. OX9 2LH. Tel: 01844 279588. oxfordautogas.com *LPG installation and servicing. MOT, service and repairs.*

SHROPSHIRE

Bridgnorth Motor Services, Station Lane, Hollybush Road, Bridgnorth, Shropshire WV16 5DP. Tel: 01746 762562 or 07708 167346. *Mark is an ex-Ford mechanic and seems very experienced.*

SOMERSET

Hatley Garage, 86 Kewstoke Road, Kewstoke, Weston-super-Mare, North Somerset BS22 9YH. Tel: 01934 622495. *Specialising in classic Mini's.*

N S Autos, Prowles Cross, Yeovil, Somerset BA22 9RG. Tel: 01935 872891. nsautos.co.uk

STAFFORDSHIRE

Midland VW, 21 Conduit Road, Norton Canes, Cannock, Staffs WS11 9TJ. Tel: 01543 495700. midlandvw.com

Snows Garage (Hanley) Ltd, 706 Leek Road, Hanley, Stoke-on-Trent, Staffs ST1 4NP. Tel: 01782 215544.

Squire Automotive, Unit 2A Zone 2 Ring Road, Burntwood Business Park, Burntwood, Staffs WS7 3JQ. Tel: 01543 672247. squireautomotive.co.uk

SUFFOLK

Barrett-Lee Ltd, 4 Byford Road, Sudbury, Suffolk CO10 2YG. Tel: 01787 468900.

DN Autos Mobile Mechanic, based Saxmundham, Suffolk – but travels. Tel: 07895 078447. *Trustworthy bloke, reasonable prices. My family's go-to mechanic.*

SUSSEX

Coles Automotive, Browns Meadow, Edburton Road, Edburton, Henfield, West Sussex BN5 9LN. Tel: 01273 857520. colesautomotive.co.uk *Land Rover ralliers.*

Cradle Hill Motors, Unit 16, Cradle Hill Ind Est, Seaford, East Sussex. Tel: 01323 890737.

Rew Auto Services, Unit 13, Eastmead Industrial Estate, Lavant, Chichester, West Sussex PO18 0DB. Tel: 01243 839520.

Vasstechnik, Unit 2, Potts Marsh Est., Eastbourne Road, Westham, Pevensey, East Sussex BN24 5NH. Tel: 01323 438754. vasstechnik.co.uk *Servicing/repairs to VAG and MG/Rover.*

SURREY

MCM, Station Lane, Milford, Surrey GU8 5AD. Tel: 01483 424815. *VW/Audi, BMW, Mercedes – all quality car specialists.*

Elmwood Vehicles Ltd, 278 Kingston Road, Ewell, Surrey KT19 0SH. Tel: 0208 394 2847 carservicerepairssurrey.co.uk

TYNE & WEAR

Gavin Reed Ltd, Sunniside Garage, Front Street, Sunniside, Newcastle-Upon-Tyne NE16 5EE. Tel: 0191 488 7298.

Scotts Bank Motor Services, Scotts Bank, Southwick, Sunderland. Tel: 0191 549 7500. *Volvo-trained.*

WEST MIDLANDS

Cottage Garage, Brandon Way, West Bromwich B70 9PW. Tel: 0121 525 4413.

GW Motors, 172 Sockfield Road, Acocks Green, Birmingham B27 6AU. Tel: 0121 706 2327 or 0121 706 4770. *Family-owned and "friendly, helpful and no bullshit."*

WILTSHIRE

FJ Chalke Ltd, The Talbot Garage, Mere, near Warminster, Wiltshire BA12 6HE. Tel: 01747 860244 www.fjchalke.co.uk. *Kia agent, before that Austin then Rover.*

Melksham CarCare Centre, Bath Road, Melksham SN12 8DB. Tel: 01225 703014.

WORCESTERSHIRE

RK Services, Lower Leys, Evesham, Worcestershire WR11 3AB. Tel: 01386 48935. rkservices.com

YORKSHIRE

Hargreaves Jeep Specialists and MOT Centre, Bradford Road, Sandbeds, Keighley, West Yorks BD20 5LY. Tel: 01274 569262. hargreavesgarage.co.uk

Horbury Garage, 35 Westfield Road, Horbury, Wakefield WF4 6HS. Tel: 01924 265283.

Pure Car Mechanics, Westgate Carr Business Park, Westgate Carr Road, Pickering, North Yorkshire YO18 8LX. Tel: 01751 475794. purecarmechanics.co.uk *The garage is female-friendly.*

RTN Auto Services, 11 Waggon's Way, Stainforth, Doncaster, South Yorks. Tel: 01302 351167. *Peugeot/Citroën specialist.*

W Sykes & Son Ltd, Lower Wortley, Leeds LS12 6AB. Tel: 0113 263 9388. *MOTs, servicing and repairs. Small family garage.*

Victoria Motors, Victoria Street, Stocksbridge, Sheffield S36 1GY. victoria-motors-stocksbridge.co.uk

Yorkshire Vehicles 24-7, Unit 5 Sunshine Mills, Leeds LS12 3HT. Tel: 0113 318 5259. yorkshirevehicles24-7.co.uk

NORTHERN IRELAND

T.F. Cars (Tommy Fegan), Motor Engineers, 35-39 Parkmount Road, Antrim Rd, Belfast BT15 4EQ. Tel: 028 9037 1868. *A father and son outfit, doing mechanical and MOT work at reasonable rates.*

McKay Motor Works, 616a Antrim Road, Newtownabbey BT36 4RF. Tel: 07787 806597. *Toyota Master Technician.*

SCOTLAND

Greenend Motors, 20 Sunnybank Terrace, Lower London Road, Edinburgh EH7 5TW. Tel: 0131 661 4825.

Lewiston Garage, J A Menzies & Sons Ltd., Lewiston, Drumnadrochit, Inverness IV63 6UL. Tel: 01456 450212. *Good village garage, MOTs. Excellent and helpful.*

Lothian Motors, 68 Lothian Street, Bonnyrigg, Midlothian EH19 3AQ. Tel: 0131 663 1076. *Family-run, electronic and aircon repairs, servicing and MOT.*

Sutherland Arms Garage, Victoria Road, Brora, Sutherland KW9 6QN. Tel: 01408 621721. *Vauxhall specialist, MOTs, aircon and servicing to all makes.*

The Garage (Wishaw) Ltd, 70A Elison Court, Motherwell, Scotland ML1 2DN. Tel: 01698 265303. *Japanese performance specialist, MOTs. Excellent diagnostics.*

WALES

MB Motors, Cowbridge Road, Brynsadler, Pontyclun, Mid Glamorgan CF72 9BT. Tel: 01443 229522.

The Olde Pounde Garage, Penperlleni near Pontypool. Tel: 01873 880312. *MOTs, plus general repairs/maintenance.*

Three Arches Services Ltd, Heathwood Road, Cardiff CF14 4HT. Tel: 02920 752101.

AJ Autos, 2a Gaskell Street, Newport, Gwent NP19 0GH. Tel: 01633 250513.

IRELAND

Harkin's Garage, Gleneely, nr Carndonagh, Co Donegal, Ireland.

CAR MECHANICS NEXT MONTH

BATTERY ELECTRIC VEHICLE TRANSMISSIONS

- How E-Axles differ from manual gearboxes
- What goes wrong
- Full stripdown detailed
- How to make a repair economically viable

DECEMBER 2025 issue out NOVEMBER 21

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- THE RISE OF THE HEADLIGHT
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CARS FOR SALE

PEUGEOT 108. 2014. 1.0-litre. 30,000 miles, aircon, infotainment. New clutch, Lots of service history. MOT Oct 2026. **£4800**. **07747 868831**. Plymouth.

TOYOTA MR2 Mk3. VVTi 2000MY. Manual. One owner from new. MOT 03/03/2026. Well maintained and cherished. Invoices for maintenance, etc. Some lacquer peel in places. Runs and drives well. **£2295** ono. **07707 224739**. Kent.

MINI COOPER. 2012. 1.6 petrol. Ice Blue/White Roof. 71,000 miles from new and full service history. Recently serviced and new Pirelli tyres. MOT Jan 2026. Superb condition and drives great. Pictures on request. **POA**. **07597 558303**. South East.

AUDI A3 3.2 QUATTRO. 2004. Current owner 17 years. Huge history file. Manual box, 124,000 miles. Timing chains, clutch, flywheel – huge jobs 15,000 miles ago, Bose music system inc original autochanger. MOT April 2026. Full leather. Spare exhaust cats. Very good condition, thousands spent. **£4999**. **07887 845063**. Rossendale.

CARS FOR SALE

JAGUAR X300 XJ6. 1994. Project. Good mechanically – engine and gearbox superb. Bodywork really not bad. Bit of lacquer peel here and there, small amount of bubbling but not rotten. Needs tyres due to their age. Mileage reading on dash has LCD fade as does clock, climate control and radio. All still functioning bar the radio. Some history including new alternator recently. **£1000**. **07917 536479**. Suffolk.

PARTS FOR SALE

GOLF Mk6 PARTS: 2009-2012 1.6 FSI service items, oil/air/pollen filters etc. **2.0 GTI** (4-door model) parts as follows: front struts/coil springs/wheel bearing housings/front hubs. Nearside front door (complete no rust). Rear wheel bearing/transverse links/trailing arms/shock/coil springs. Brake discs/calipers. All parts intended for rebuild of project car. **£100** to clear (offers?). **07856 284613** for further info. Essex.

MERCEDES R170 REAR WHEEL. Plus new Landsail tyre 225/50/R16. Tyre covered 8 miles only. **£50**. Buyer collects. **07488 358646**. Bolton, Manchester.

RAMPS

SEALEY MR1 VEHICLE LIFT/RAMP. Only used once, but it's too heavy and I'm too old to lift and use it. Currently dismantled for storage but all parts included. **£995** (no offers please). **07947 556392**. Buyer to collect. Ripon, North Yorkshire.

CLASSIFIED DEADLINE for NOVEMBER 2025 issue: Oct 1st

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SEPTEMBER 2025

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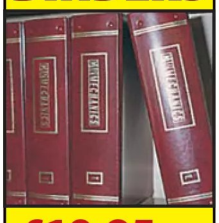
BINDERS



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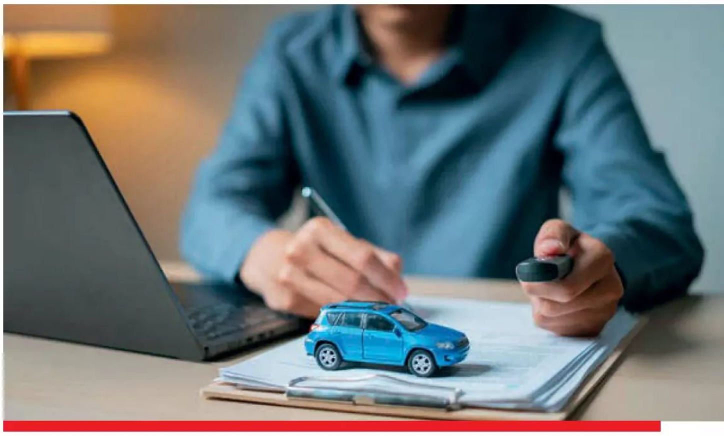
In my Humble Opinion

Mike Humble reminds us once again about the dreaded used car troublemakers.

Timewasters – you have been warned!



Perhaps I am just old-fashioned or maybe just one of life's dinosaurs – you be the judge, but I've always been under the impression that trying to buy or indeed sell a used car meant actual dialogue with a human being. Once upon a time in the west it usually meant a small ad in the local paper, a carefully worded postcard in the window of your local corner shop or an A4-sized advert blue-tacked to the inside of the rear window of the motor in question. The telephone would ring, you spoke to a person and they either came round to view… or not. Once the viewer was on your driveway, you then had the best odds in the business, namely a 50-50 chance of doing a deal on the spot. Life seemed so much simpler back then. But as Bob Dylan once sang and forewarned us – the times they are a-changin'.

I know I have bemoaned before about the terrors of buying and selling a second-hand car from your own domicile, but a good automotive contact of mine, a writer nonetheless, who really ought to know better, only just a few days ago was glumly relaying his personal experiences of trying to sell his sister-in-law's Vauxhall Corsa 1.4. He had taken the easy and lazy way of doing it by posting it on internet forums, Facebook group pages – and had been knocked sideways by the number of time-wasters he had experienced for a car being sold for pretty much the price of a two-night stay in a Premier Lodge type hotel.

Requests for info coming to him in the small hours of the night and repeated text messages were just some of the usual messing around signs. The big problem is that the internet and the text Messenger are the stalking grounds for the messer – that breed of person who wastes your time by constantly asking for pointless information, photographs and of course the infamous phrase of: 'what's the lowest you will take for the car M8?'.

This all may sound a bit harsh, but they really are the dregs of society for the likes of us who genuinely want to sell or buy an honest cheap old second-hand car. Several times I have yearned to reach into my monitor, drag them out and kick their lungs in, but of course there are ways you can hugely reduce your chances of being messed around from pillar-to-post. If you must do an online advert, don't put your email address on it unless you really must. Remember, a time-waster will avoid actual dialogue at all costs, or any action that will involve them requiring a bit of effort.

As a rule, unless you are selling something of high value, something sexy or desirable or the images you have posted are terrible, constant requests for information or more images tend to come from time-wasters or those over fussy types of folk who still wouldn't be happy if you gave them the moon on a gold-plated shovel. This tends to extend to incoming text messages as well – you have been warned. In the past where I have received text messages, I respond at first but invite them to actual conversation to test their genuine intentions. If they don't I'll then call them, usually it will go to answerphone or a text will come back saying something like 'sorry mate, it doesn't take incoming calls at the moment after dropping my phone down the loo' – or some other pony-esque excuse.'

> *"As a rule, unless you are selling something of high value, something sexy or desirable or the images you have posted are terrible, constant requests for information or more images tend to come from time-wasters or those over fussy types of folk who still wouldn't be happy if you gave them the moon on a gold-plated shovel"*

I went through all this with the pal I was talking to, and he then suggested I would be narrowing down the chance of potential interested parties. So… what would you rather deal with then? A dozen chancers or time-wasters or two or three genuine buyers with real intentions of looking at and/or buying your car. Another good symptom of a time-waster is the one who comes to view but chats and twitters away like a canary when looking or on the test-drive, rather than keeping an eager eye or ear open for something being awry with the car. Get one of these on your front and you can be certain that your time and patience is being put to the test and wasted. With just a little bit of forethought and planning before you place your car for sale, the risk of being taken up the garden path can be reduced. It's about attracting the genuine and scaring off the idiots.

I used to get it all the time in the showrooms when I sold new cars. The moment you tried to sit them down to take some personal details before the test-drive, the time-waster would panic and come up with the most ridiculous excuses to run a mile – of which they usually would do. So, if you are trying to sell your old motor privately, here's some pointers that will help you weed out the jokers from the genuine in your advert if you must do it online:

- Stick to the important facts – how much, where your location is and MOT/service status.
- Try to avoid email addresses until the deal or deposit is in the pocket.
- Encourage real-time dialogue not messages but try to use a land-line number if possible.
- Make yourself contactable – i.e. don't advertise the car then fly off on holiday for a fortnight.
- If a text message comes through, try a couple of times to ring them back. If they don't answer your calls, your leg is being pulled.

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